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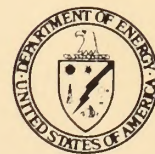
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COLSTRIP

PROJECT **EIS**

FINAL

SUPPLEMENT





United States Department of the Interior

BUREAU OF LAND MANAGEMENT
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Billings, Montana 59107

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July 6, 1981

Dear Reader:

Enclosed for your review is the Final Supplement to the Final Colstrip Project EIS issued in 1979. This supplement was prepared jointly by the Bureau of Land Management (BLM), Forest Service (FS), and the Bonneville Power Administration (BPA). It provides an evaluation of alternate corridor locations and substation sites to those designated by the Federal agencies in the September 1979 Colstrip Project Record of Decision.

In the Boulder, Montana area, three alternatives including the designated corridor were evaluated. Thirteen alternatives including the designated corridor were studied in the Deer Lodge area. In addition, four substation sites were studied.

As a result of the federal environmental studies completed and the public input received, the federal agencies have identified a proposed corridor and substation site; they are the Boulder corridor in the Boulder area, the Black Mountain + AAA corridor in the Deer Lodge area, and Substation Site 3A located four miles southwest of Garrison.

The Boulder corridor leaves the designated corridor east of Boulder and goes around the north end of the Boulder Valley. The Boulder corridor crosses I-15 at the north end of the Boulder Valley, passing about three miles north of Basin. The Boulder corridor rejoins the alignment of the designated corridor northwest of Basin and continues southwest to the Berkin Flat Area.

The Black Mountain + AAA corridor leaves Berkin Flat and continues west across the Continental Divide, then turns north following the foothills on the east side of the Deer Lodge Valley to near Garrison. There, the corridor turns west across I-90 and the Clark Fork River south of Garrison continuing west to the site of Substation 3A.

The identification of the federal proposed corridor and substation site was based on environmental analysis contained in this supplement and the Colstrip Project EIS and on evaluation of public comments and issues. A final corridor and substation Record of Decision will not be issued by the federal agencies until at least 30 days following publication of the Federal Register notice for this Final Supplement.

After the Record of Decision is issued, an interdisciplinary team will finalize the centerline location within the selected corridor. Affected landowners will continue to be contacted during this process. Comments on this Final Supplement should be submitted to Neil Morck of my staff at the address on the letterhead.

Sincerely yours,

Michael J. Penfold
State Director

Enclosure

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FES 81-25

FINAL SUPPLEMENT

TO THE

COLSTRIP PROJECT

FINAL ENVIRONMENTAL IMPACT STATEMENT

FES 79-29

Prepared by

BUREAU OF LAND MANAGEMENT
DEPARTMENT OF THE INTERIOR

FOREST SERVICE
DEPARTMENT OF AGRICULTURE

BONNEVILLE POWER ADMINISTRATION
DEPARTMENT OF ENERGY

Michael J. Farfold

STATE DIRECTOR, BLM
MONTANA STATE OFFICE

July 1981

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FINAL SUPPLEMENT

TO THE

COLSTRIP PROJECT

FINAL ENVIRONMENTAL IMPACT STATEMENT

FEIS 79-29

Figure 2

BUREAU OF LAND MANAGEMENT

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BRANCH OF ADMINISTRATION

WATER RESOURCES ESTIMATION

DEPARTMENT OF THE INTERIOR

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BUREAU OF LAND MANAGEMENT

1979-1980

EIS FINAL SUPPLEMENT

COVER SHEET

Lead Agency:

Department of Interior, Bureau of Land Management

Cooperating Agencies:

Department of Agriculture, United States Forest Service
Department of Energy, Bonneville Power Administration

Title of Proposed Action:

Location of transmission line corridor in Deer Lodge and Boulder areas

Location of Proposed Action:

State of Montana: Counties of Deer Lodge, Jefferson, Powell, and
Silver Bow

Abstract:

This supplement to the Final Colstrip Project EIS evaluates additional 500-kV transmission line corridor alternatives between Boulder and Garrison, Montana, including the Designated Corridor identified in the Colstrip Project Federal Transmission Corridor Record of Decision dated September 21, 1979. This supplement is the result of new information and public involvement obtained during the process of locating the centerline within the corridor designated for the crossing of Federal lands. During that process locations outside the Designated Corridor were identified.

Two additional alternatives were studied in the Boulder area and eleven additional alternatives were evaluated in the Deer Lodge area. Also evaluated were four substation sites for integrating electric energy from Colstrip Unit 3 with the Federal Columbia River Transmission System by September 1983.

The Date by Which Comments Must be Received is:

AUG 17 1981

For Additional Information Contact:

Neil Morck
Bureau of Land Management
222 N. 32nd Street
P. O. Box 30157
Billings, Montana 59107

Telephone: (406) 657-6457

THE FARM BUREAU

1917

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The Farm Bureau is a national organization of farmers and farm owners. It is the only organization of its kind in the United States. It is the only organization that represents the interests of the farmer in all matters of public policy. It is the only organization that has the power to bring the farmer's voice to the attention of the government. It is the only organization that has the power to bring the farmer's voice to the attention of the people. It is the only organization that has the power to bring the farmer's voice to the attention of the world.

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U.S. DEPARTMENT OF AGRICULTURE
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S U M M A R Y

Electric energy from Colstrip Units 3 and 4 is needed to satisfy the demand for electricity in Montana and the Pacific Northwest by the winter of 1983-1984. Colstrip Unit 3 is expected to begin producing electricity in October 1983. The double-circuit 500-kV transmission facilities from Townsend to Garrison Substation will deliver electrical energy from Unit 3 to the existing 230-kV transmission system for use at load centers in Butte, Helena, and Missoula, beginning with the winter of 1983-1984.

The Montana State Director of the Bureau of Land Management and the Regional Forester of the USFS Northern Region designated a corridor for location of the Colstrip 500-kV double-circuit transmission line on Federal lands in a Record of Decision dated September 21, 1979.

Meetings were held with local landowners and residents in Townsend, Boulder, and Deer Lodge, in February 1980 to identify local issues pertaining to centerline location within the Designated Corridor. The issue of corridor relocation surfaced during subsequent public meetings held with local landowners, residents, the North Boulder Protective Association (NoBPA) and the Deer Lodge Valley Resource Association (DLVRA), as well as with local, State, and Federal government agencies.

The issue of corridor relocation had not emerged during earlier public meetings held in conjunction with the Colstrip Project EIS.

The public issues and agency concerns identified during those meetings have centered around the following areas:

- 1) Health and Safety: The electric, magnetic, and noise effects of transmission lines.
- 2) Costs: Landowner compensation, cost to taxpayers of lines and increased local services, such as road maintenance or schooling for worker's children, loss of tax revenue (BPA pays no taxes on their facilities), and estimated costs of electrical losses.
- 3) Land Use: Avoidance of irrigated agricultural lands, of private lands, of communities, farmsteads, and buildings, and of impacts on commercial forestland.
- 4) Procedures and Scope: Amount of public involvement in EIS process; comparative lengths of alternatives and method of corridor selection; need for study of alternative corridor locations in Boulder and Deer Lodge Valleys before centerline location; potential for paralleling existing lines; construction and mitigation practices; and recommendations of public agencies.

- 5) Visual Intrusion: Particularly in Boulder and Deer Lodge Valleys.
- 6) Future Development: Concern that this line sets a precedent for additional, parallel lines in an energy corridor.
- 7) Overall Environmental Impact.
- 8) Environmental Impact on Natural Resources: Conflicts with special management areas or unique resources; impacts on fish and wildlife habitat; impacts on Threatened and Endangered species and their critical habitats.
- 9) Impacts to Historic and Archeological Resources.
- 10) Concern over impacts associated with the corridors which would cross irrigated agricultural land, would cross the valley and create visual impacts, and/or would cross private land. For these reasons, Deer Lodge and Boulder area landowners are opposed to the Designated Corridor and to Alternatives B and C at Deer Lodge.

The major results reached during the evaluation of alternatives in this supplement are:

- 1) Several alternatives did not meet the underlying need and purposes to which the agencies are responding, and were eliminated from detailed study (see Introduction, Alternatives Eliminated from Detailed Study).
- 2) For the Boulder Basin area, the Transmission Environmental Report (TER) methodology indicates that both the Boulder and Basin Alternatives would have greater environmental impacts than the Designated Corridor. However, only the Designated Corridor would cross the valley floor and irrigated land--conditions which the Boulder Valley landowners and residents strongly oppose because of impacts on the local community, and their lifestyle.
- 3) In Deer Lodge Valley, the Designated Corridor has the fewest total impacts and second fewest per-mile impacts. Alternative F has the fewest per-mile impacts of the alternatives.

The alternative shown as having low impacts for most of the Major Environmental Criteria is the Thunderbolt +AA Alternative.

The alternative shown as having low impacts for most of the Project Development and Jurisdictional Criteria is the Thunderbolt +AAA Alternative.

- 4) All four substation sites meet the technical and engineering criteria BPA considers important for selection of a substation site.

Sites 1 and 2 would be located in important wildlife habitat and would limit the number of alternative corridors considered.

Site 3 would be located in a populated valley south of Gold Creek and would require expensive noise abatement technology. Site 3 is opposed by the Gold Creek residents. Six miles of double-circuit 230-kV line would be required to interconnect with Montana Power Company's Hot Springs-Ovando-Anaconda 230-kV line. Site 3 could be used by all alternative corridors.

Substation Site 3A would require 4.5 miles of double-circuit 230-kV line to connect to BPA's and MPC's existing 230-kV lines. Site 3A would be away from important wildlife habitat, residences, and populated areas. Site 3A can be reached only by alternative AAA corridor.

- 5) Public and agency comments received in response to the Draft Supplement generally did not support the project or any of the alternatives in either the Deer Lodge or Boulder Valleys.

A large portion of the public comments were at the project level and dealt with areas such as Federal jurisdiction in corridor selection, segmentation, emphasis of wildlife impacts rather than impacts to people, electrical and biological effects of transmission lines, use of private lands vs. public lands, tax revenues foregone, and impacts to private property and property values.

A number of public comments in response to the Draft Supplement sought information on conflict of interest regarding corridors eliminated from study; why BPA was not complying with the Montana Major Facility Siting Act; and on tax impacts.

Many comments expressed disapproval of the Gold Creek Substation Site 3 and associated corridors. Other comments expressed disapproval of the Designated Corridor, AA, and AAA alternatives across the Deer Lodge Valley.

- 6) The BLM, FS, and BPA corridor and substation preference is the Boulder Alternative, the Black Mountain +AAA Alternative, and Substation Site 3A. The agencies agreed on this proposal after evaluation of public comment on the Draft Supplement, and further analysis of the environmental impacts of all alternatives.

The BLM, FS, and BPA must, within their respective jurisdictions and after consideration of this supplementary analysis and public comment thereon, document in an amended Record of Decision their respective corridor decisions, identifying the rationale used in reaching those decisions, and identifying whether all practicable means to avoid or minimize environmental harm from the selected alternative have been adopted including the adoption of mitigation measures. The Federal decision will include:

- Whether or not to deviate from the Designated Corridor;
- The choice among alternative corridors in the Boulder, Basin, and Deer Lodge Valley areas;
- The choice among substation sites in the Garrison area;

DRAFT SUPPLEMENT TO THE COLSTRIP PROJECT EIS

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P U R P O S E A N D N E E D

NEED

The underlying need to which the Federal agencies are responding in proposing the alternatives is the need to integrate energy from Colstrip Generating Units 3 and 4 with the Federal Columbia River Transmission System (FCRTS) by September 1, 1983.

The Montana Power Company and the other participants in the Colstrip Units 3 and 4 determined in the early 1970s that they would not have sufficient resources to meet the projected load demands on their systems by the early part of the 1980s. The consortium of MPC and the other applicants was formed in early 1973, and in May, 1973, they applied to the State of Montana for permission to Guild Colstrip Units 3 and 4. After underlying need was established before the Montana Board of National Resources and Conservation (MBNRC), the Board granted The Montana Power Company a "Certificate of Environmental Compatibility and Public Need" (July 22, 1976). This certificate gave State of Montana approval for the Colstrip Project, including the transmission lines from Colstrip to an integration tie with the Federal Columbia River Transmission System. Congress also recognized the need for the construction of the 500-kV transmission lines by passing House Joint Resolution 1139 (later Public Law 95-482) on October 18, 1978. This law expressly extended BPA's authority to expend funds "for the construction of facilities to integrate new Colstrip-generated power into the Bonneville Power Administration transmission grid."

Project Need was also discussed in the Colstrip Project EIS in Volume 1, Sections 1.2, Significant Issues; and 1.5, Need for the Project; and 2.7, Alternatives; and in Volume 2, Appendix 1.5, Need for the Colstrip Project and Energy Conservation.

The Townsend-Garrison segment of this 500-kV transmission system is an integral part of the entire Colstrip 3 and 4 Project. A substantial portion of Colstrip Unit 3 will be integrated into the Northwest power transmission system as soon as connections are made to the Garrison, Montana, area. The Garrison area location allows the proposed Townsend-to-Garrison facilities to be tied into two existing 230-kV facilities (BPA's Hot Springs-Anaconda line and Montana Power Company's Hot Springs-Ovando-Anaconda line) which parallel each other from Anaconda to the area southwest of Garrison and then diverge in their routes to Hot Springs. The Garrison connection will permit Colstrip Unit 3 generation to be transmitted from Colstrip to Garrison, then over the two existing 230-kV lines primarily for use in the Montana areas served by these two 230-kV lines.

The need for the Garrison interconnection is further explained in the June 3, 1981, letter from Mr. Donald B. Gregg, Manager of Resources, Planning and Contracts, Montana Power Company, to Mr. Marvin Klinger, Assistant Administrator for Engineering and Construction, Bonneville Power Administration, which states:

Montana Power Company and the other participants in the Colstrip 3 and 4 Project do not have sufficient resources to meet the projected load demand on their systems in the 1983-84 and 1984-85 years without relying on the Colstrip Project. This is true even after the load forecasts recently have been adjusted downward to reflect the impact of the 1980 recession. Colstrip Unit No. 3 is scheduled to be available for commercial service in January 1984, with testing to be done in the prior three months.

If the 500-kV lines from Colstrip to Townsend to Garrison and the Garrison Substation are not completed by the fall of 1983 as presently scheduled, it would not be feasible to place Colstrip Unit No. 3 in commercial operation. However, with the interconnection of the proposed 500-kV lines at Garrison, substantially all of the plant capacity for Colstrip Unit No. 3 can be utilized....

....Delay beyond October 1983 in establishing the Garrison interconnection will require the purchase of replacement power which would otherwise be available from Unit No. 3. This replacement power, if it can be found, could cost approximately \$29 million per month. Such replacement power would be oil or natural gas-fired electric generation since no other new base-load generation is available in that time frame. If oil or gas cannot be purchased or if sufficient oil/gas fired generation capacity cannot be found in the west, thus meaning replacement power cannot be made available (and Unit No. 3 cannot be run for lack of transmission facilities) then curtailment of electricity usage by the consumers in Montana and the Northwest would likely become necessary. In such situation, the real cost of such curtailment to those consumers could exceed many times over the \$29 million per month cost of replacement power. Such costs would be in the form of lost production, lost jobs, possible damages to industrial processes or equipment, increased health hazards, and many other damages which can occur by curtailment of electrical energy.

PURPOSE

While locating the transmission line, the Federal agencies will adhere to these purposes: (1) minimize adverse environmental effects; (2) minimize costs; (3) conserve energy; and (4) achieve consistency with other National policies.

CORRIDOR DECISION

The Federal agencies are (1) the Bureau of Land Management (BLM), which is lead agency for filing of this EIS supplement; (2) the Forest Service (FS); and (3) Bonneville Power Administration (BPA). BLM and FS propose to make land allocation decisions for the location of the transmission line on lands they administer (Federal lands). BPA proposes to make a decision on location of the transmission line on non-Federal land (private and State lands).

The final corridor decision will be documented by the Bureau of Land Management, Forest Service, and BPA in an amended Record of Decision, if an alternative different from the Designated Corridor is selected. Existing authorities for the decision on Federal lands include the Federal Land Policy and Management Act of 1976 (FLPMA). The basic authority for BPA's actions are found in the Bonneville Project Act, 16 U.S.C. 832a, et seq., the Federal Columbia River Transmission System Act, 16 U.S.C. 838, et seq., and the Pacific Northwest Electric Power Planning and Conservation Act, P.L. 96-501. Public Law 95-482, passed as House Joint Resolution 1139 on October 18, 1978, expressly extended BPA's authority to expend funds for the construction of facilities to integrate new Colstrip-generated power into the Bonneville Power Administration transmission grid.

Consensus as to the decision among the Federal agencies will be required since location across Federal lands will affect the location across private lands and vice versa.

Reason this supplement is being written. The Department of the Interior, in November 1976, directed the Bonneville Power Administration (BPA), to take the lead in the preparation of the Colstrip Project Environmental Statement. Subsequently, after BPA became part of the Department of Energy, the Geological Survey was given overall responsibility for coordinating the effort, with Bonneville continuing its preparation role. In fulfilling that responsibility, BPA worked closely with other Federal bureaus and with the Department of the Interior. The EIS was filed with the Environmental Protection Agency on July 31, 1979. It was followed by a Record of Decision issued by BLM and FS on September 21, 1979, which jointly approved a 2-mile-wide corridor from Colstrip to Hot Springs across Federal lands administered by those agencies. BPA concurred with the BLM and FS decision expressing its intent to build a double-circuit 500-kV transmission line in the corridor starting from its interconnection in the Townsend vicinity with the facilities built by Montana Power Company, extending to a new 500-kV substation in the vicinity of Garrison, Montana, (substation to provide intertie with BPA and MPC existing 230-kV facilities located in the Garrison area), and continuing to an interconnection with the existing Federal grid in the Hot Springs-Plains area.

Following the corridor decision, the BLM, BPA, and the FS agreed to a centerline evaluation process. A tentative engineering centerlines was proposed within the corridor. Public meetings were then held in the Townsend, Boulder, and Deer Lodge areas as part of the process to arrive at a centerline decision. A number of landowners and members of the general public expressed concern at the meetings over the centerline locations and impacts the transmission line would have. New transmission line location alternatives were presented, some deviating from the Designated Corridor.

BLM, FS, and BPA agreed to reopen the decisionmaking process on the location of the Federally-approved corridor in the Boulder and Deer Lodge areas. The decision was reopened to examine possible corridor variations developed during the meetings between members of the public and the Federal agencies. This supplement sets forth a comparative analysis of those alternatives (see Figures 3, 4, and 5). As part of the routing decision, this supplement also evaluates alternative substation locations in the Deer Lodge-Garrison-Gold Creek vicinity. Alternatives not warranting a detailed comparative analysis are discussed later in this Chapter under the heading Alternatives Eliminated from Detailed Study. (See pages 1-13 through 1-19.)

The environmental impact analysis methodology used in this supplement follows that used in the Colstrip Project EIS and the Transmission Environmental Report (TER). This document summarizes and references the material contained in those two documents in order to eliminate repetition and bulk.

STATUS OF SURVEYS

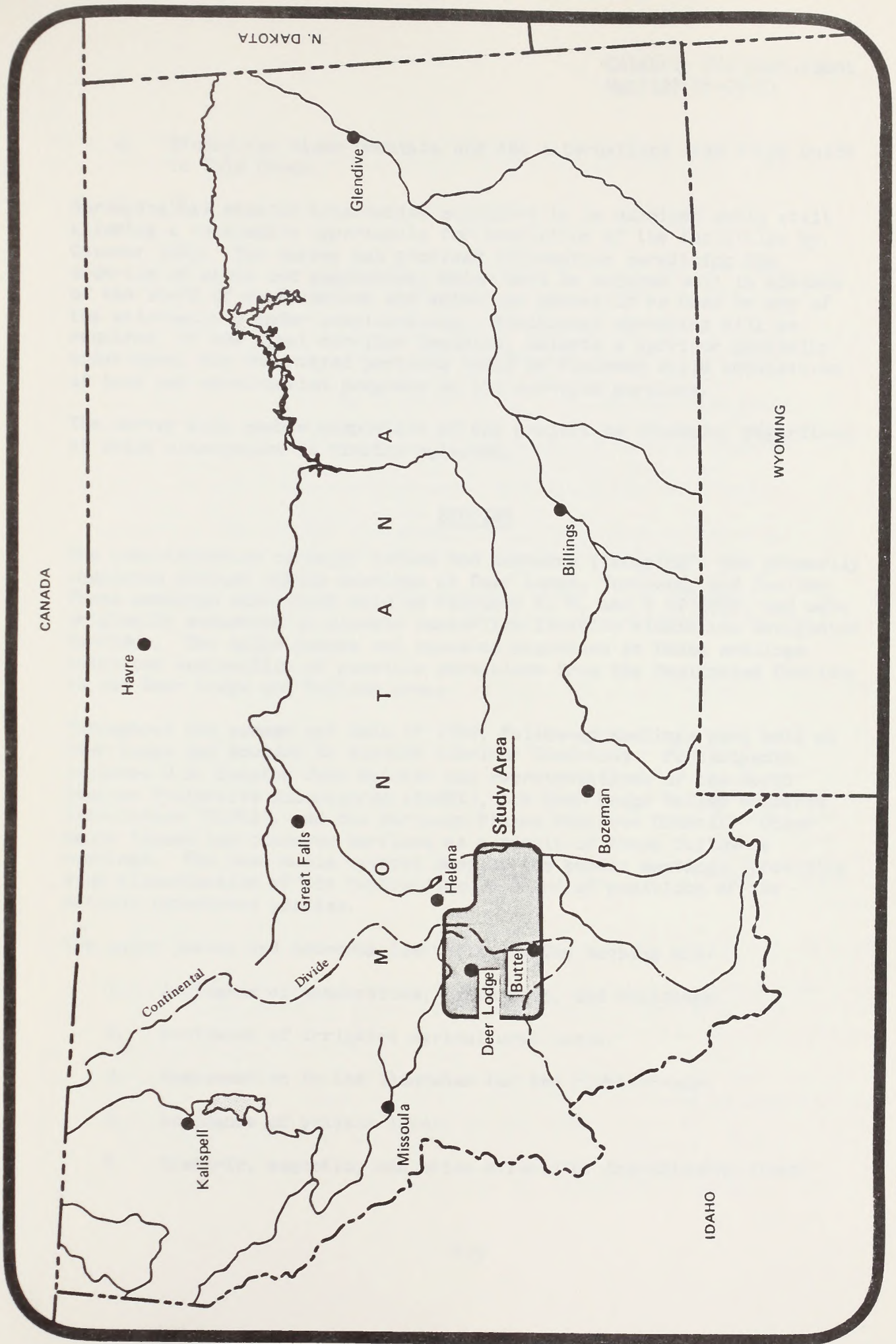
BPA is surveying for a centerline from Townsend to the Garrison Substation, knowing that there is no guarantee that the surveyed centerline will be within the selected corridor or that it will be the final centerline selected in the centerline environmental analysis.

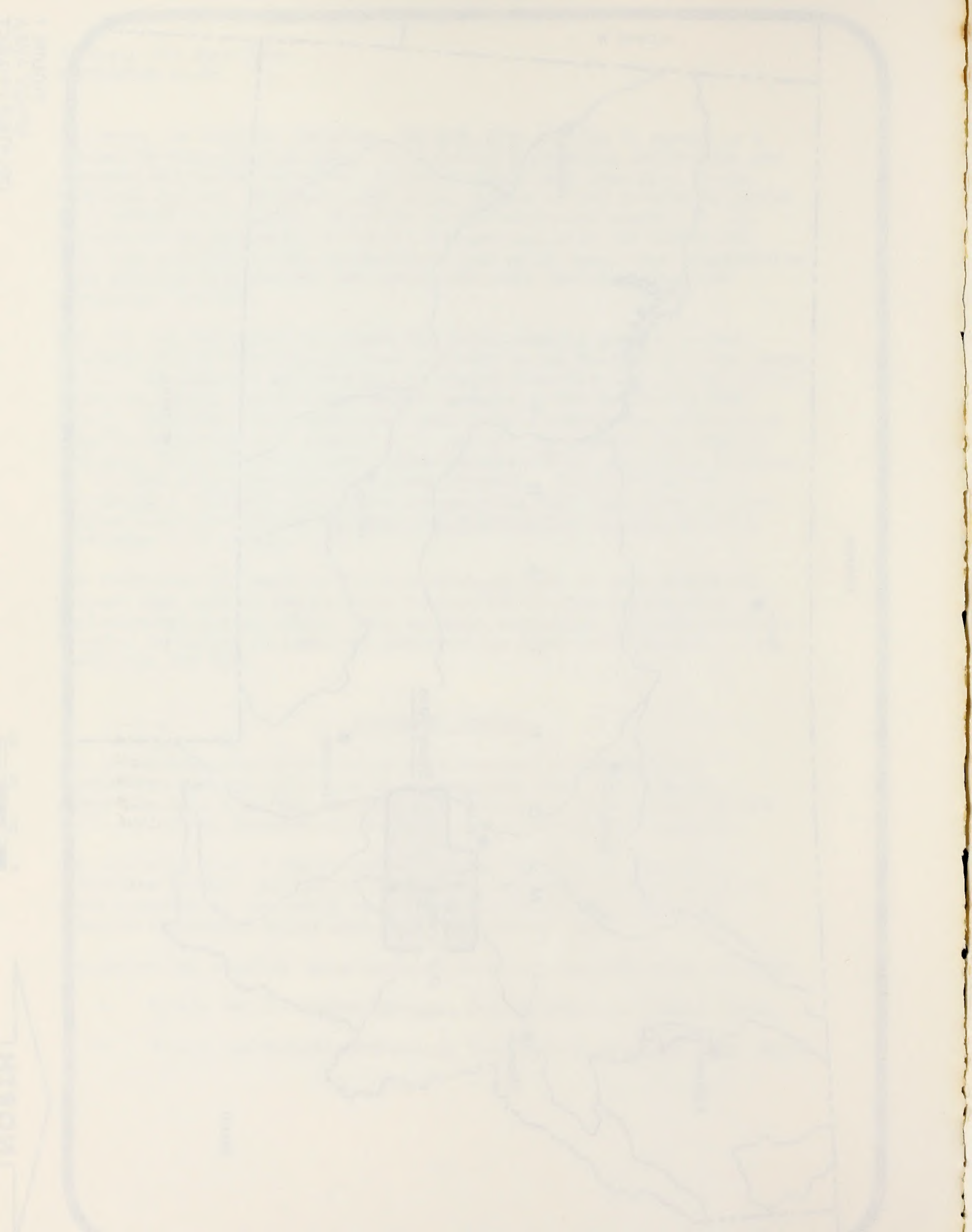
BPA concluded that it was necessary to take the risk of surveying a centerline because the cost of additional centerline surveys would be small compared to the losses incurred should there be no means to transmit electrical energy from Unit 3 in October 1983.

The centerline location being surveyed is within the following corridors:

- a. Within the Designated Corridor from Townsend to Elkhorn Creek.
- b. Within the Boulder Alternative from Elkhorn Creek to Torpy Gulch.

FIGURE 1
STUDY AREA
COLSTRIP PROJECT





- c. Within the Black Mountain and AAA Alternatives from Torpy Gulch to Gold Creek.

Surveying has enabled alternative corridors to be examined while still allowing a reasonable opportunity for completion of the facilities by October 1983. The survey has provided information permitting the ordering of steel and conductors, which must be ordered well in advance of the start of construction and which can generally be used on any of the alternatives under consideration. Additional surveying will be required, if the final corridor decision, selects a corridor partially unsurveyed, the unsurveyed portions could be finished while acquisition of land and construction progress on the surveyed portions.

The survey will enable completion of the project on schedule, regardless of which alternative is finally selected.

SCOPING

The identification of major issues and concerns ("scoping") was primarily completed through public meetings at Deer Lodge, Townsend, and Boulder. These meetings were first held on February 7, 8, and 9 of 1980, and were originally scheduled to discuss centerline location within the Designated Corridor. The major issues and concerns expressed at those meetings initiated exploration of possible deviations from the Designated Corridor in the Deer Lodge and Boulder areas.

Throughout the summer and fall of 1980, follow-up meetings were held at Deer Lodge and Boulder to discuss corridor locations. Participants included U.S. Senator John Melcher and representatives of the North Boulder Protective Association (NoBPA), the Deer Lodge Valley Resource Association (DLVRA), and the Northern Plains Resource Council. Other major issues and concerns surfaced as a result of these follow-up meetings. The news media covered many of the public meetings, providing wide dissemination of the topics discussed and of positions of the various interested parties.

The major issues and concerns identified during scoping are:

1. Avoidance of communities, farmsteads, and buildings.
2. Avoidance of irrigated agricultural lands.
3. Compensation to the landowner for the right-of-way.
4. Avoidance of private lands.
5. Electric, magnetic, and noise effects of transmission lines.

6. Need for more public involvement and input from landowners in the preparation of any transmission line EIS.
7. Visual intrusion of the transmission line into the agricultural Boulder and Deer Lodge Valleys.
8. Need for the study of alternative corridor locations in the Boulder and Deer Lodge Valleys before any centerline location.
9. Concern that designation of this transmission line will lead to additional paralleling transmission lines.
10. Cost to taxpayers.
11. Process followed for corridor selection.
12. Construction and mitigation measures for transmission facilities.
13. Lack of tax revenue to local governments because BPA, a federal entity, does not pay taxes on its facilities.

Of the issues above, 1, 2, and 7 were included in the criteria used in this Supplement shown on page 1-12. The remaining issues are addressed below.

Issue #3 - Compensation to Landowners.

Appraisals prepared for the Bonneville Power Administration must be made in accordance with "Uniform Appraisal Standards for Federal Land Acquisitions". Landowners are entitled to Just Compensation for any rights acquired by BPA, including any lessening of value of their property when transmission lines cross it. Just Compensation is measured as the difference between fair market value of the appraised property before imposition of the easement and its value after imposition. Damage to roads, crops, fences, etc., will be appraised and paid for after construction.

Issue #4 - Avoidance of Private Lands

The consideration of private, State, and Federal lands is a part of the NEPA process in determining which alternate would have the least environmental consequences.

It is not possible to locate a corridor from Townsend to Garrison without crossing some private land. The proposed transmission lines are to be constructed east to west, while the mountains and valleys are oriented north to south. Because the private holdings are primarily located in the valleys, some private lands must be crossed for any east-west transmission line location.

The miles of Federal and State lands crossed by each alternative are included under Project Development and Jurisdictional Criteria.

Issue #5 - Electric, Magnetic, and Noise Effects

As described in Appendix C of this supplement, there is no evidence that even the maximum fields found beneath a 500-kV line are harmful. At 300 feet from a 500-kV line, electric field strength is greatly reduced and is comparable to levels produced by household electrical appliances.

Over 20 research projects are currently underway, sponsored by the Department of Energy and/or Electrical Power Research Institute. In addition, BPA closely follows research being conducted on this subject throughout the world. Information derived from this research shows that there is no reason to believe that the electrical effects of a 500-kV line are harmful. Thousands of miles of 500-kV lines have been successfully operated throughout the U.S. for several years. People living and working near these lines are not reporting any harmful effects of electric or magnetic fields. Likewise, utility personnel that work on those lines report no apparent problems from these fields.

The maximum electric field allowed for a BPA 500-kV line can affect honeybees in commercial-type hives. The effect is apparently related to microshocks within the hive. We are not aware of any reports that existing 500-kV lines have caused problems with honeybees. This is probably because the maximum calculated field level (i.e., 7-9 kV/m) seldom occurs and does so only within a small area at midspan.

Investigations of possible long-term effects are part of the studies being conducted by Battelle-Northwest. Mice were conceived, born, and raised for three successive generations in a 100-kV/m electric field. (This field strength for mice is roughly comparable to a person standing in a 10-12 kV/m electric field. Maximum field strength beneath a 500-kV line is 8-9 kV/m.) No effects were found in conception, litter size, mortality, body weight, or neuromuscular development.

Studies have shown that livestock behavior and production are not adversely affected by transmission lines.

Some types of pacemakers could be affected by electrical interference such as that from electrical appliances, machines, and transmission lines. Persons with such pacemakers are generally aware of these hazards and should check with their doctors and take appropriate precautions. A pacemaker patient riding in an automobile is shielded from the electric field of a transmission line. No adverse effects to cardiac pacemakers from existing BPA transmission lines have been reported.

BPA transmission lines are designed in accordance with the National Electric Safety Code (NESC). As stated in the draft EIS, the NESC

specifies a 5 mA limit for electrostatically induced currents. This level was estimated from tests done with adults, and it is assumed that 99.5% of children could "let go" of an object producing this current level. A most important consideration is that conditions leading to 5 mA induced current are very unlikely. Induced currents are typically less than 2 mA near 500-kV lines. We are not aware of any cases where children have been harmed by induced currents from these lines.

Issue #6 - Public Involvement

Three major environmental studies have been made to determine where best to locate the Colstrip transmission lines. Westinghouse and C.T. Main Company prepared the first for the Montana Power Company. The State of Montana prepared its own EIS. BPA, BLM, and FS prepared the Federal study. This study considered the public input and data completed previously by Montana Power Company and the State.

Public hearings were held in Missoula, Helena, Butte, Billings, and Forsyth for comment on the Federal Draft Colstrip Project EIS.

The BLM, BPA, and FS consider adequate the 24 meetings held in the Boulder-Deer Lodge area to obtain public input before preparing this supplement.

Issue #8 - Need to Consider Alternate Corridor Locations

All reasonable alternate corridor locations are considered as a result of public or agency input. Other alternatives were given initial consideration, but dropped from further study upon identification of major problems. These other alternatives are addressed at the end of this chapter.

Issue #9 - Additional Paralleling Transmission Lines

There are presently no generating plants (beyond Colstrip Unit 4) scheduled or proposed for eastern Montana to serve Pacific Northwest loads. However, some potential does exist for such development before the year 2000 in Wyoming as well as in eastern Montana. Based on current information, it is unlikely that east-west transmission would be required before the year 2000.

Any future transmission lines or other linear facilities proposed after the Colstrip 500-kV transmission lines are constructed would be the subject of another separate EIS or environmental assessment. Any additional proposed use of this corridor would be evaluated individually on its own merits.

The length of existing transmission lines paralleled by each alternative is included under Project Development and Jurisdictional Criteria, Item 4 on Tables 4 and 9.

Issue #10 - Cost to Taxpayers

There should be little, if any, additional costs to the taxpayers.

The ratepayers of the region, not the taxpayers of a specific jurisdiction, pay for the construction program.

The 1974 Federal Columbia River Transmission System Act places Bonneville's transmission system on a self-financing basis. Under this method, BPA uses its revenues from power sales to finance its operating costs and, to the extent that revenues are available, a portion of its construction program. The balance of the construction program is financed through the sale of revenue bonds to the U.S. Treasury. Those bonds are repaid with interest by the ratepayers.

BPA is required to set its wholesale power rates at a level that will produce sufficient revenue to recover the cost to the Government of producing, purchasing, and transmitting electric energy, including repayment of the investment of the Federal Treasury, plus interest.

The monetary impact of 100 to 200 workers in the area for transmission lines construction was addressed on pages 3.2-51 through 3.2-56 of Volume 1, and pages A3.2.2.13-1 and A3.2.2.13-2 of Volume 2 of the Colstrip Project EIS.

Some construction workers can be expected to move their families into the area for the two-year construction period. Numbers will depend upon whether the work is yearlong or seasonal in nature, and the expected length of the job, such as clearing, construction of footings, assembly and erection of steel towers, and stringing of electric conductors.

Some construction workers' children can be expected to attend local schools for one to two years. Because the transmission line under construction will be approximately 82 miles in length, it is unlikely that all the children would be concentrated in one school district.

Many of these workers moving into the area can be expected to rent existing houses, if available, or to use trailer courts. There should be only marginal impacts on municipal systems such as water and sewer.

While living in the area, construction workers will be paying state income taxes, and spending at least a part of their income in the local area for day-to-day living expenses. The construction period will be too short to have any long-term effects on the local economy.

The expense of constructing and/or upgrading access roads will be borne by BPA. Also, roads used exclusively for maintenance of the transmission lines will be maintained at BPA's expense.

Easements will be obtained whenever private lands are crossed by the transmission lines, leaving the lands on the tax rolls. No impacts are expected in general tax assessment values.

The lack of tax revenue from the transmission lines is addressed under Issue #13.

Issue #11 - Process Followed for Corridor Selection

The process followed for corridor selection is described in the Colstrip Transmission Environmental Report (TER), Volume 1 of the Colstrip Project EIS, and the Decision Document. The same process was followed for consideration of Alternatives to the Designated Corridor addressed in this supplement.

Issue #12 - Construction and Mitigation Measures

Mitigation measures to be followed during construction, operation, and maintenance are addressed in the mitigation section in this Supplement, pages 2-2 and 3-5.

Issue #13 - Lack of Tax Revenue to Local Governments

Bonneville Power Administration does not have legislative authority to pay taxes or in-lieu-of-taxes on its facilities. The figures for tax revenue that would have been paid had a private utility built this transmission line on the state-approved corridor were given in both the Montana DNRC DEIS (Volume Four, page 233) and the Colstrip Project EIS (Volume 1, pages 3.2-55 and 56).

They are based on county-wide average mill rates, which vary by school district within each county, and which are generally highest in cities or towns (which this line would not cross). The figures are, therefore, probably somewhat high. The following figures reflect the revenues which would accrue to the counties if a private utility were to build the Townsend-Garrison Substation in the proposed corridor.

<u>County</u>	<u>Approximate Mill Rate 1979-80</u>	<u>Approximate Miles of BPA Line</u>	<u>Annual Revenue per Mile of Line</u>	<u>Total Annual Revenue</u>
Broadwater	175	17	\$13,293	\$225,981
Jefferson	210	43	\$15,952	\$685,936
Powell	150	33.5	\$11,394	\$381,699

The figures above include levels for the state school foundation program and the state university system plus county roads, city planning, sewers, etc.

CRITERIA

Criteria selected by BPA, BLM, and FS, along with the environmental analysis will guide the decision process. Those issues pertaining to environmental consequences (Issues 1, 2, and 7) are included in the criteria, and are so identified.

The criteria have been divided into two categories: Environmental Criteria and Project Development or agency Jurisdictional Criteria.

The Environmental Criteria address the major impacts of the corridor alternatives. They are:

1. The overall environmental impact as determined by the numerical analysis methodology.
2. Impact on agriculture, especially to irrigated lands in the Boulder and Deer Lodge Valleys (Issue #2).
3. Impacts on residences and inhabited areas, including the avoidance of communities, farmsteads, and buildings (Issue #1).
4. Impacts on commercial forestland.
5. Visual impacts of the transmission line on Basin, and on the Boulder and Deer Lodge Valleys (Issue #7).
6. Impacts on Threatened and Endangered species and to their critical habitats.
7. Impacts on fish and wildlife habitat.
8. Impacts on historic and archeological sites.
9. Impacts on special management areas and unique resources.

Project Development and Jurisdictional Criteria address those items providing additional information for the decision makers. The combination of both types of criteria is intended to present the agency decisionmakers with all the information needed to select a corridor. The criteria are:

1. Cost of construction.
2. Length of transmission lines on state and Federal lands (Issue #4).
3. Amount of paralleling of existing transmission lines (Issue #9).
4. Estimated cost of electrical losses.
5. Major recommendations of agencies, groups, and individuals.

ALTERNATIVES

According to the Council on Environmental Quality, which wrote the rules on EIS preparation, there are three types of alternatives in an EIS (see 40 CFR 1508.25(b)):

(1) No Action. The "No-Action" alternative in cases of a decision on a Federal project "would mean the proposed activity would not take place." (46 Federal Register 18027; March 23, 1981). Applied to this Federal project--integrating Colstrip Units 3 and 4--the No Action alternative would mean that Colstrip Units 3 and 4 would not be integrated. The discussion of the No Action alternative in the Colstrip Project EIS is found in Volumes 1 and 3, Section 1.5. This alternative was rejected when the decision was made in 1979 that BPA would build integrating transmission. Since the No Action alternative is not being reconsidered, this supplement, which has been prepared to examine possible deviations from the previously approved corridor, does not discuss it.

(2) Other reasonable courses of action. Reasonable alternatives are detailed in Chapters 2, 3, and 4 of this EIS Supplement. Alternatives which were not considered reasonable are discussed later in this Chapter under the heading Alternatives Eliminated from Detailed Study. (See pages 1-13 through 1-19.)

(3) Mitigation measures not in the proposed action. Decisions on which of these mitigation measures will be adopted will be made when the agencies prepare the Record of Decision.

The format used in this Supplement varies from the standard Council on Environmental Quality (CEQ) outline in order to more clearly present the alternatives considered in the Boulder and Deer Lodge areas, and to assist the public and decisionmakers in analyzing the issues.

A total of 16 alternate corridor segments has been identified and studied. Segments vary in length from approximately 25 to 29 miles each in the Boulder-Basin area, and approximately 35 to 63 miles each for the Deer Lodge area.

Four alternate substation site locations were identified and studied in the Deer Lodge Valley area. The western terminus, located at Gold Creek, was determined by the location of corridor segments AA and AAA and by the suitability for a substation site. Only at this terminus, the location for Substation Site 3, do all alternative corridors in the Deer Lodge area converge back into the Designated Corridor.

From the terminus, the Designated Corridor continues to the west, paralleling BPA's existing 230-kV Hot Springs-Anaconda transmission line. At the present time, alternate routes to the Designated Corridor are being studied from Garrison west. These new routes will be included in the Draft Garrison-Spokane 500-kV Transmission EIS scheduled for completion by October 1981.

ALTERNATIVES WHICH WERE ELIMINATED FROM DETAILED STUDY

Alternative to Defer Decision Until Garrison-Spokane EIS is Completed

Comments have suggested that the final corridor decision for facilities between Townsend and Garrison be delayed until the EIS revision now beginning for facilities west of Garrison (Garrison-Spokane) is completed.

The proposal to make a decision earlier on the Townsend-Garrison facilities than the Garrison-Spokane facilities is consistent with the more immediate need for completion of these facilities. The final routing decision for the Townsend-Garrison facilities is expected by mid-August 1981, with a scheduled completion date for the project proposed for fall 1983. The final routing decision for facilities west of Garrison is not expected until spring 1982, with a scheduled completion date proposed for fall 1985. (See Purpose and Need section).

The Federal EIS, filed August 3, 1979, provided a comprehensive review of the Colstrip 3 and 4 generating units and of all the transmission facilities necessary to transmit their output. The corridor for the construction of the facilities was also identified as part of this process.

Since the September 1, 1979 decision, further location analysis has taken place at a more local level. Local meetings in response to concerns regarding the centerline location of the Townsend-Garrison facilities fostered the development of proposed deviations from the Federally-approved corridor. These proposed route deviations have been

analyzed and are documented in this supplement to the 1979 Federal Colstrip Project EIS. The alternatives studied in detail in this supplement allow a full range of options west of Garrison to be reviewed.

That range is presently being examined for the Garrison-Spokane transmission line corridor. A revised EIS covering transmission facilities from Garrison to Spokane is expected to be completed by spring 1982, allowing enough time for construction and energization of the project by spring 1985.

Delaying the Townsend-Garrison corridor decision could fix the entire route from Townsend to Spokane in one decision. However, delay in route location now, causing delay in the completion of the Townsend-Garrison facilities beyond the scheduled October 1, 1983 deadline, would cost the companies about \$1 million per day to acquire replacement energy. A substantial portion of those costs would be passed on to consumers (see Appendix G).

The proposed transmission facilities would serve both area and regional energy needs. Montana load centers such as Butte, Anaconda, Helena, and Missoula will need additional reinforcement by the winter of 1983-84. Failure to provide facilities for transmission of power to the Garrison area would prevent adequate supplies of power from reaching the area. It would also delay the transmittal of regional and area power in 1985, when the Garrison-Spokane project, which routes power from Colstrip Unit 4 from the Garrison substation, must be energized to meet regional and area needs.

To summarize, the Deferred Action Alternative is not a reasonable alternative because delay in completion of the Townsend-Garrison portion would create significant economic and technical consequences. A decision on the Townsend-Garrison portion earlier than a decision on the portion west of Garrison is consistent with accepted principles of decisionmaking on large projects comprised of smaller portions because:

- The Townsend-Garrison portion serves to integrate Colstrip Unit 3 generation into the Federal Columbia River Transmission System for service needed and ready for transmittal by 1983;
- The Garrison area is a logical terminus where both existing 230-kV lines are close enough to integrate the power from Unit 3; and
- A decision on the Townsend-Garrison portion still leaves open a full range of options from Garrison west.

The Elkhorn-Twentyone Gulch Alternative

This alternative leaves the Designated Corridor near Elkhorn Creek and proceeds in a northwesterly direction, passing through Green, Buck, and Twentyone Gulches. The corridor then goes down the Rawhide Creek drainage and crosses Muskrat Creek near its confluence with Rawhide Creek.

Passing near the airway marker beacon and over Interstate 15, the corridor turns in an east-west alignment common to the Boulder and Basin alternatives. The corridor continues in a westerly direction past Amazon Station, Comet, and Mount Thompson to Uncle Sam Gulch. There it turns southwesterly, and, crossing Deer Creek, rejoins the Designated Corridor at Saul Haggerty Gulch.

A portion of this corridor is entirely within the Elkhorn Wilderness Study Area between Twentyone Gulch and Rawhide Creek. The Elkhorn Wilderness Study Area was designated by Congress on October 19, 1976, for study of its suitability for preservation as wilderness. No further action has been taken by Congress.

The Secretary of Agriculture is directed to maintain the present existing wilderness character and potential for inclusion in the National Wilderness Preservation System for a "...period of four years from the date of submission to the Congress of the President's recommendation...." The final version of the EIS has cleared the Office of Management and Budget and is presently being reviewed by the Federal agencies.

Because of the uncertainties associated with resolving the Elkhorn Wilderness Study Area with Congress in time to meet construction schedules, this corridor was dropped from further consideration.

Boulder-Garrison Alternative

A tentative corridor location, originating near Boulder and proceeding in a fairly straight line to near Garrison, has been suggested by the NoBPA and DLVRA. In conjunction with this corridor, a substation could be located near Gold Creek, Garrison, or Hoover Creek.

Preliminary studies have indicated that such an alignment would be approximately twelve miles shorter than the Designated Corridor.

Those preliminary studies also indicated a high potential for icing conditions because approximately 15 miles of the corridor would be at elevations of 6500 feet or higher. This increased exposure to icing and snow conditions reduces the reliability of the line because of higher

potential for failure and limited access during severe weather conditions. Heavier tower construction would also be required because of increased wind and ice loads.

The corridor would cross portions of the Deer Lodge and Helena National Forests. Much of the National Forest land is timbered and is classified as commercial forest land, for a distance of approximately 16.5 miles. On the Helena National Forest portion, the forested land contains above-average timber stand volumes. In the TER, the visual impacts on forested lands was considered to be high and the visual absorption capability was considered to be poor. Total visual impact would be high. Much of the area would be visible from the Avon Highway. The residents of Avon are known to oppose a corridor in their area.

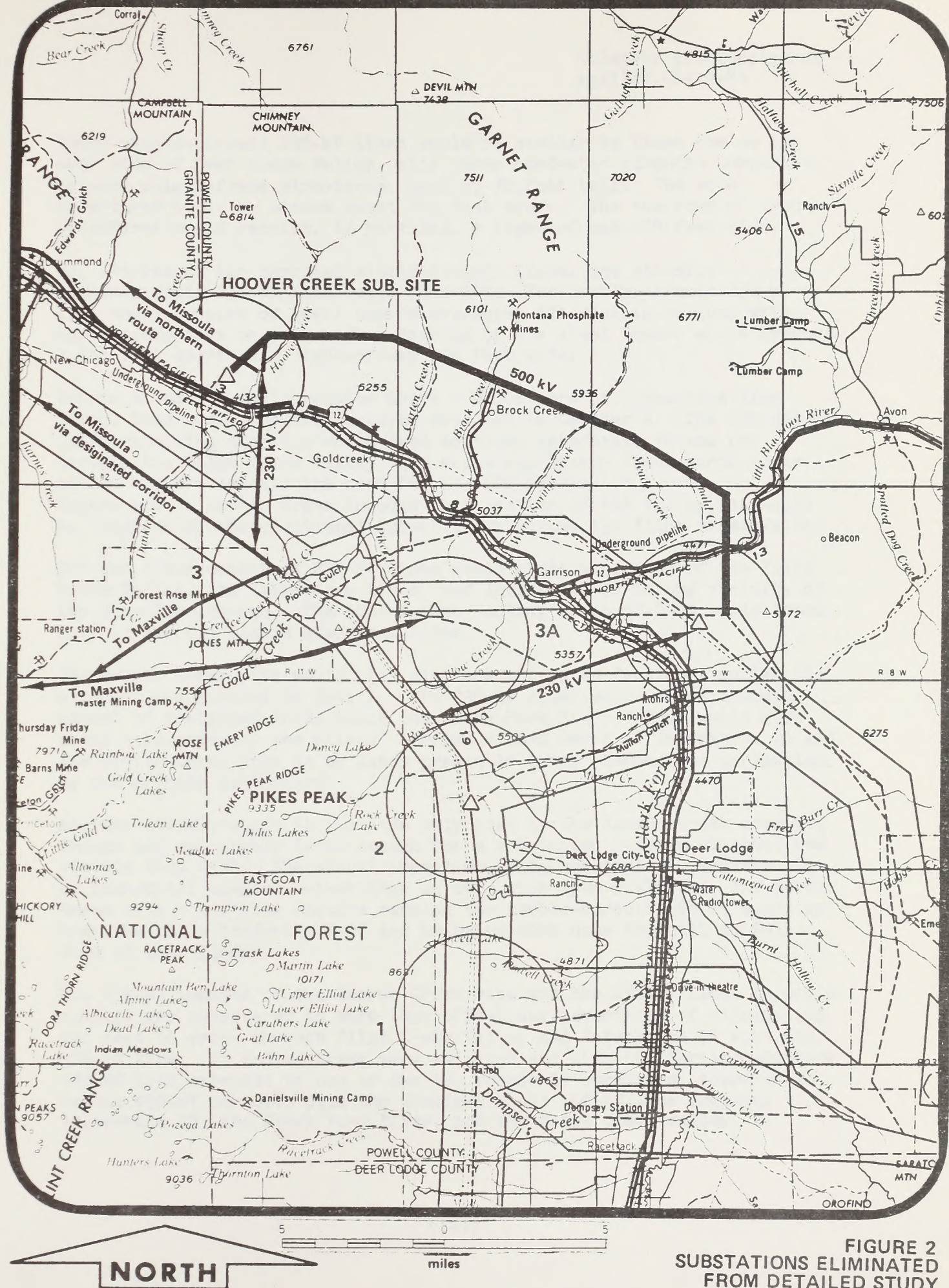
In summary, this alternative was not considered in detail in this EIS Supplement because the Federal agencies have determined that it is unreasonable for the following reasons:

- It would cross mountainous terrain in areas that would cause:
(1) icing conditions, in association with high winds, that could collapse towers and snap conductors; and (2) deep snowfall and rugged terrain that would make access to portions of the transmission line impossible during severe winter conditions.
- It would cross timbered land in areas that are above average in volume, making this alternative less desirable.
- It would have high visibility west of the Continental Divide, making this alternative less desirable.
- The icing conditions and high winds would require heavier towers in mountainous terrain, making this alternative more expensive on a per-mile basis.

Hoover Creek Substation Site Alternative

In response to comments received from individuals in the Deer Lodge-Garrison-Gold Creek-Drummond areas, other substation sites and associated transmission line routings were investigated, including a routing of the 500-kV transmission lines north of Interstate 90 to the vicinity of Hoover Creek. This routing would allow the 500-kV lines to miss the Flint Creek Valley, avoiding the associated visual and agricultural impacts (See Figure 2).

A Hoover Creek site would require two new 6-mile, probably parallel, 230-kV lines to provide the tie-in loop between BPA's existing Hot Springs-Anaconda 230-kV facilities and the Hoover Creek Substation.



These single-circuit 230-kV lines would be similar to those now on the east side of Deer Lodge Valley, with three conductor circuits supported by wood pole H-frame structures, each 65-70 feet tall. The wood structures would be spaced about 700 feet apart. The two rows of wood structures would require, if parallel, a right-of-way 180 feet wide.

Or, instead of two parallel single-circuit lines, one six-mile double-circuit 230-kV line could be built. The double-circuit 230-kV line would consist of steel towers averaging 120 feet in height, with three conductors on each side. Spacing of the steel towers would average 1,150 feet apart on a right-of-way 100 feet wide.

Either situation would require about 6 miles more of connecting line (loop) than would the alternatives detailed in Chapter 4. The two 230-kV interconnecting circuits would need to cross Interstate 90 and run through the Flint Creek Valley. So while the Hoover Creek-north route option would eliminate the need for the 500-kV line to cross Interstate 90 and to cross through this section of the valley, it would be replaced by the additional 230-kV lines across the Flint Creek Valley.

The two interconnecting 230-kV lines would cross a portion of the Flint Creek Valley, the Clark Fork River, and Interstate 90 in the vicinity of the Jens Interchange. The 500-kV line routing north of I-90 would cross U.S. 12 and the Little Blackfoot River.

The Hoover Creek site would also displace irrigated farmland, unlike the alternatives studied in detail. The 230-kV lines would cross a small amount of irrigated lands along the Clark Fork River. They would also cross approximately one mile of irrigable land north of Interstate 90 and the Hoover Creek site is on lands presently being planned for irrigation by the private landowners.

Another consideration is that the only site in the Hoover Creek area big enough and reasonably level enough for a substation site is elevated and visible from I-90. The visual impact would be substantial, looking like an industrial complex rather than an otherwise open hillside. The Hoover Creek site would also require running two double-circuit 500-kV spurs up over the hills bordering I-90 and bringing them down the hill in full view of the highway.

The visual impacts of the Hoover Creek site and the 230-kV lines it would require are considered to more than offset any advantages of eliminating the need to cross through Flint Creek Valley and Interstate 90 with the 500-kV line. If Hoover Creek were selected and then the Garrison-Spokane 500-kV line extended to one of the two southerly corridors, there would be two 230-kV circuits plus the double-circuit 500-kV line crossing Interstate 90, the Clark Fork River, and the Flint Creek valley.

A Hoover Creek site would also tend to foreclose two corridor options under consideration south of the Clark Fork River and across the Flint Creek Valley. One is the designated corridor, which parallels the existing transmission lines through the Flint Creek Valley, and the other is a more southerly route crossing the valley near Maxville.

A substation site at Hoover Creek, and an associated 500-kV line routing north of Interstate 90 would not be a reasonable alternative and was dropped from further study.

Beck Hill Substation Site Alternative

A substation site on Beck Hill would allow consideration of all routing options west of Garrison. However, it is not a reasonable alternative considering the interconnecting 230-kV lines, and the nearness to and impacts created at the subdivision on Beck Hill.

Interconnections with MPC's existing Hot Springs-Ovando-Anaconda 230-kV transmission line and BPA's Hot Springs-Anaconda 230-kV transmission line would be required. Those interconnecting lines would have to be constructed a distance of 10 miles from the existing lines across the Deer Lodge Valley to Beck Hill. The interconnections would require either four single-circuit 230-kV lines or two double-circuit 230-kV lines. The Clark Fork River and Interstate 90 would have to be crossed.

Each line of the two double-circuit 230-kV transmission lines would be like that described for the Hoover Creek site. Two rows of towers, if parallel, would require a right-of-way 200 feet wide. Each of the four single-circuit lines would also be like those described for the Hoover Creek site. Four rows of wood structures, if parallel, would require a right-of-way about 360 feet wide.

The substation would be located near the Wildflower Hills Subdivision on Beck Hill. The substation, 500-kV lines, and 230-kV lines would create impacts to people and residences at the subdivision.

Visual impacts to the subdivision would occur because of the 230-kV and 500-kV transmission lines and the substation.

The line would be likely to cause impacts to irrigated farmland at the Clark Fork River and along the route between Beck Hill and the existing lines.

Because of the impacts to the Wildflower Hills Subdivision on Beck Hill, and the length, location, and impacts of the 230-kV lines which would be required, the Beck Hill Substation is not a reasonable alternative and is dropped from further consideration.

A L T E R N A T I V E S I N T H E B O U L D E R A N D B A S I N A R E A S

DESCRIPTION OF THE ALTERNATIVES

This is Chapter II which presents the environmental consequences and mitigation resources for the alternatives and the Designated Corridor in the Boulder-Basin area in accordance with 40 CFR, Part 1502.10e and g. The Boulder Alternative in the preferred alternative of the Federal agencies.

Transmission facility design and construction characteristics are discussed in Appendix A, pages A-1 through A-8.

Designated Corridor

The Designated Corridor segment (see Figure 3) proceeds from Elkhorn Creek northwest across Browns Gulch and McCarthy Creek. Passing north of Boulder, the Corridor crosses High Ore Creek, Big Limber Gulch, and Cataract Creek. Near Cataract Creek, the Corridor turns westerly, crosses Deer Creek, and comes to an angle point near the confluence of Basin Creek and Saul Haggerty Gulch. The Designated Corridor then turns southwesterly, passing north of Pole Mountain, across Red Rock Creek, and Torpy Gulch, and coming to another angle point southeast of Berkin Flat. The Corridor then turns to the west across Alta Gulch to an angle point near Finn Gulch.

The Boulder Alternative

The Boulder alternative leaves the Designated Corridor near Elkhorn Creek and proceeds northwest, crossing McCarthy Creek, Sloan Gulch, Rawhide Creek, and Muskrat Creek, as it proceeds to the vicinity of the airway marker beacon. At the beacon, the Boulder Alternative turns west across Interstate 15, and, in a corridor common with the Elkhorn-Twentyone Gulch and Basin Alternatives, proceeds westerly past Amazon Station and Mount Thompson to Uncle Sam Gulch. At Uncle Sam Gulch, the Boulder Alternative turns southwesterly, crosses Deer Creek, and rejoins the Designated Corridor at Saul Haggerty Gulch.

The Basin Alternative

The Basin Alternative follows the same route as the Boulder Alternative as far as Uncle Sam Gulch. Instead of turning southwest at Uncle Sam Gulch, however, the Basin Alternative continues west for approximately 5 miles before turning southwest near Basin Creek and connecting with the Designated Corridor near Alta Gulch.

ENVIRONMENTAL CONSEQUENCES

In the original EIS, environmental consequences were discussed by impact. For instance, impacts to wildlife for all alternative corridors were discussed together. In this supplement, environmental consequences are discussed by alternative corridors, in order to make it easier to understand the overall combination of impacts or consequences for each corridor. (Exceptions are discussions of Climate, Air Quality, Noise, Land Use Plans and Social and Economic Factors, which are summarized for all alternatives in each area.)

A summary of the EIS environmental consequences discussion, emphasizing impacts generally associated with building and operating a large transmission line in the study area, is presented in Appendix B to this Supplement. Appendix C discusses electrical and biological effects of transmission lines. The impacts for each alternative are illustrated in the impact rating maps, Appendix E to this Supplement. Discussions of the specific impacts for each Boulder-Basin corridor follow the Mitigation discussion. The miles of impact rating for each environmental determinant are listed in Table 1.

MITIGATION

The mitigation measures listed in the Colstrip Project EIS (Section 3.3 of Volume 1 and Appendix A.3.3.3 of Volume 2) apply to all new corridor alternatives addressed in this Supplement. The mitigation measures listed on pages VIII-1 through VIII-21 of the Colstrip Transmission Environmental Report (TER) are also applicable, and were included in the Colstrip Project EIS as Appendix A.3.3.3. Copies of mitigation measures in these documents will be reproduced on request.

The mitigating measures listed in Volume 1 are broken down into 32 separate Federal required or State proposed measures dealing with items such as compliance with laws, land clearance/ing, payment for timber, fire suppression, cleanup and waste disposal, payment for and repair of damages, building and/or replacement of fences, cattle guards, and maintenance of improvements.

The 126 measures listed in Volume 2 are broken down into the broad categories of Natural, Social, Visual, and Communication Site Development, and are designed to be applied to specific areas during centerline studies. They deal with subjects like: vehicle emissions; buffer strips; erosion control; seasonal use restrictions for soils or wildlife; line, road, staging area, tower, and bridge location; drainage structures; timber cutting, yarding, and slash cleanup; soil storage and replacement; steam protection; waste disposal; line and construction facility restoration; revegetation; blasting; range improvement

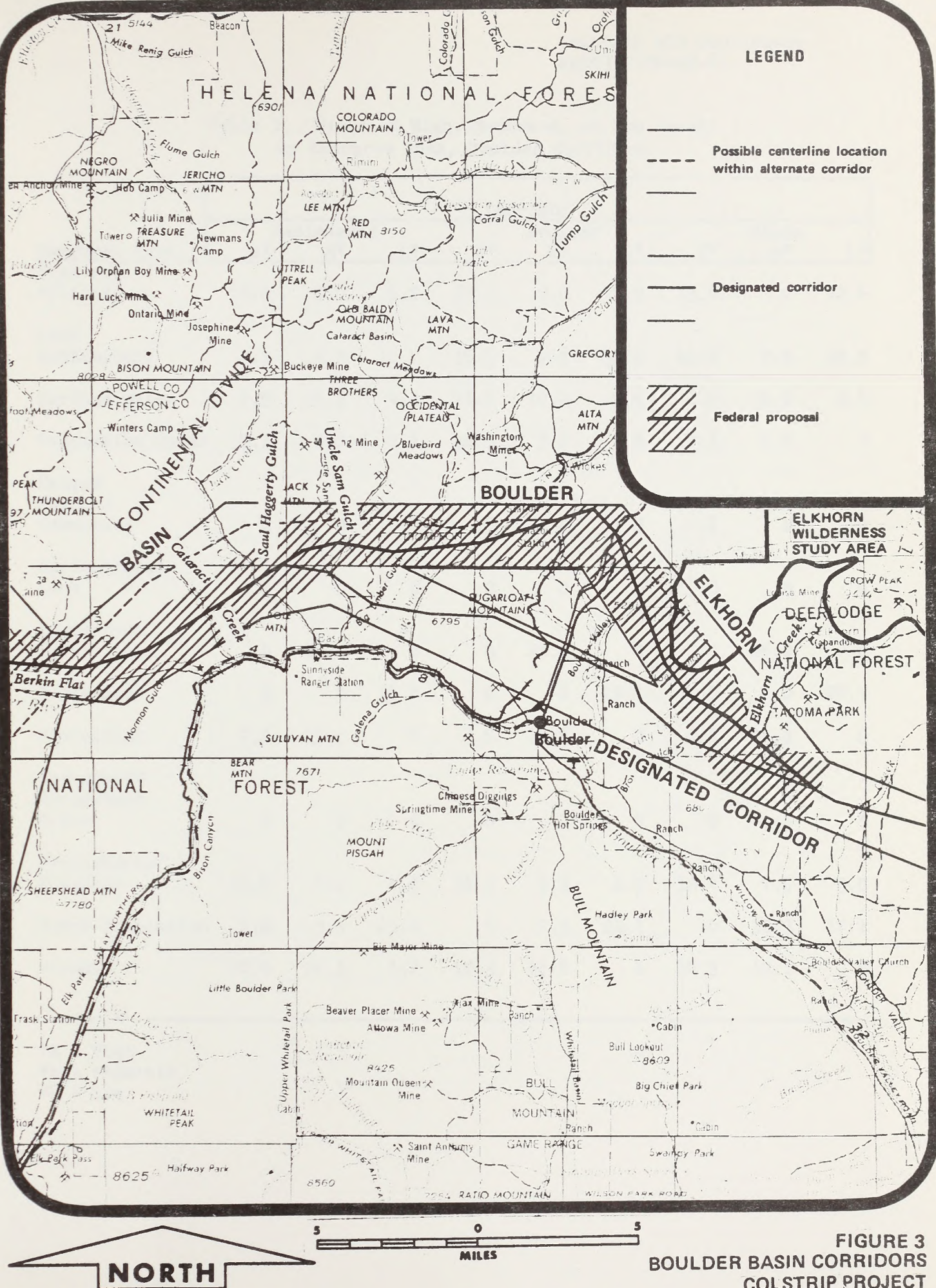


FIGURE 3
BOULDER BASIN CORRIDORS
COLSTRIP PROJECT

Table 1. Miles of High, Moderate, or Low Impact
by Resource Area, Boulder Corridors

Resource Area	Corridor								
	Designated			Boulder			Basin		
	H*	M*	L*	H*	M*	L*	H*	M*	L*
Fish and Wildlife	14.6	5.0	6.2	17.1	2.0	10.0	13.8	3.0	12.6
Land Suitability	9.3	4.8	11.7	16.6	2.5	10.0	16.4	2.5	10.5
Surface Water	7.5	14.2	4.1	16.6	10.0	2.5	16.3	10.6	2.5
Vegetative Cover	19.1	5.0	1.7	26.1	3.0	0	26.4	3.0	0
Unique Natural Resources	0	0	0	.8	0	0	.8	0	0
Agricultural Land	1.7	0	0	0	0	0	0	0	0
Commercial Forest Land	0	19.1	0	0	25.9	0	0	26.2	0
Rangeland	0	0	25.8	0	0	29.1	0	0	29.4
Recreation	2.2	23.6	0	8.6	20.5	0	8.6	20.8	0
Designated Management Areas	0	0	0	0	0	0	0	0	0
Prehistoric/Historic	13.6	6.2	6.0	16.9	9.3	2.9	19.4	7.0	3.0
Human Population	1.0	3.8	21.0	0	7.0	22.1	0	12.3	17.1
Visual	10.0	14.1	1.7	10.3	18.8	0	10.3	19.1	0

*H = High
*M = Moderate
*L = Low

protection; threatened and endangered species protection; slope restrictions on tractors; avoidance of high wildlife-impact areas; restriction and restoration of soil compaction; location of line roads and towers to minimize conflicts with agricultural practices, including irrigation; activities restrictions during holidays; mitigation of TV or radio reception problems; control of access if required; avoidance of highly sensitive or high use viewing areas; holding of preconstruction workshops in and working with communities and school districts to avoid problems between residents and workers; providing for medical emergency transportation; surveying communities for adequate facilities and providing facilities such as temporary quarters and day care centers, as needed; backdropping the line to avoid visually prominent locations; locating the line where the visual contrasts would be minimized; crossing areas obliquely rather than perpendicularly to contours; painting of line and non-reflective conductors to reduce glare, contrasts, and visibility of the line; using revegetation for screens, preferably native vegetation; topping rather than cutting trees; avoidance of long, straight views of the line; and use of existing access to minimize new road construction.

BPA's standard practice is to abide by its Transmission Engineering Standard Construction Specifications, 1978, which includes many types of standard mitigation measures.

Mitigation measures developed as a result of the impacts of new alternatives identified in this supplement are listed below.

- 1) The effects of the transmission line construction through the elk and deer critical winter range in the Boulder-Basin area will be monitored. Such a study will be incorporated into an overall monitoring study of transmission line impacts on land use.

The study will determine the impacts of construction and operation of Extra High Voltage (500-kV) lines on elk and deer winter range, and will develop measures for mitigation if adverse effects are identified. Base data must be obtained before clearing operations begin.

BPA will undertake all practicable mitigation measures recommended by the results of the study to mitigate the adverse effects of the transmission line.

- 2) Bonneville will conduct reconnaissances in the vicinity of the final corridor and centerline in early spring for the 2 years (1981, 1982) preceding clearing and construction to monitor bald eagle use of the Boulder-Basin area, specifically to see whether

there are eagle nests in the area. If nesting is discovered, this significant new information will trigger reinitiation of Endangered Species Act consultation with the USFWS.

- 3) Bonneville will use non-reflective conductor between Townsend and the Garrison substation to reduce visual impacts.
- 4) Darkened towers which reduces visual impacts will be used in visually sensitive locations. Specific locations will be identified during the centerline location process.
- 5) Raptor nesting platforms will be installed in appropriate locations along the transmission line. Specific locations will be identified during the centerline environmental analysis process.
- 6) Mitigation for potentially affected historic, archeological, and architectural resources of national significance will be conducted in accordance with procedures established under the National Historic Preservation Act of 1966 and EO 11593.

All known historic and archeologic sites identified following consultation with state and regional historic and archeological authorities will be evaluated for potential impacts. BPA will systematically survey all lands crossed by the final centerline location in order to locate previously unidentified sites.

- 7) Any part of the transmission line likely to be classified as an obstruction under F.A.A. Regulations will be submitted to the Federal Aviation Administration for review. Determinations by the agency could include no action or various schemes of painting or lighting towers, or placing marker balls on the conductor.
- 8) Site-specific mitigation measures will be developed during the centerline and substation site location and environmental analysis process. Those measures will be part of the Project Plan, which provides direction on Federal lands, and will also be part of BPA's construction specifications, which guide construction on State and private lands. Negotiations with landowners may also result in additional site-specific mitigation measures to be included in BPA's construction contract specifications and land acquisition agreements.

ALL ALTERNATIVES

Climate, Air Quality, Noise

Environmental consequences associated with climate, air quality, and noise are general in nature and are described in Appendix B of this Supplement.

Land Use Plans

The Jefferson County land use plan has been written, but not adopted, approved, or implemented. The goal of that Plan is "to enhance and preserve the rural nature of the area with no drastic changes in existing development patterns." There are no specific references to existing or planned transmission lines in the land use plan, therefore a corridor would not be inconsistent with the plan.

The corridor would conflict with the plan because while the transmission line would not change development occurring in Jefferson County, road and transmission line construction and visual impacts, would not enhance the rural nature, and would impact the rural character in the immediate visual impact zone of the line.

Social

Social consequences would be similar to those described in the Colstrip Project EIS, Volume 1.

Economic

The cost of building the electric transmission facilities is ultimately to be borne by the rate payers.

No property tax revenues will accrue to the counties. Bonneville Power Administration does not have legislative authority at the present time to pay either state or local taxes on capital improvements or to make in-lieu-of-tax payments.

The Pacific Northwest Electric Power Planning and Conservation Act does provide for impact payments to local governments beginning at some future time.

DESIGNATED CORRIDOR

Geology and Soils

Approximately 2.3 miles of the corridor runs at an elevation of 6500 feet or higher. According to Montana Power Company, icing conditions occur at these high elevations. Stronger towers and shorter spans would be required.

West of Boulder, the landslide potential is moderate to severe. Slopes in this area are generally steep and would require earthmoving activity during construction, increasing the risk of slope failure. East of Boulder, near McCarthy Creek, steep slopes and granitic soils present a moderate landslide hazard. Once disturbed, these soils would be difficult to stabilize. Large granite boulders are prevalent in the area south and east of McCarthy Creek. Any movement of the boulders would increase the area of soil disturbance. Possible direct and long-term consequences of slope failures include the damming and siltation of streams, landscape scars, and soil loss.

Detailed geologic investigations and precautions against slope failure will be necessary. These and similar areas will require gentle road grades, extra drainage structures, extra precautions for road surfacing, and other precautions such as seeding and mulching exposed soil restrictions during wet soil conditions, topsoil replacement, and leaving 200-foot-wide buffer strips along all identifiable streams.

Water Resources

The combination of steep slopes and high erosion potential (see Geology and Soils) would foster sediment pollution of nearby surface waters. The high impact areas are in surface waters flowing through the sandy soils generally found east of Brown's Gulch and west of Interstate 15 to Big Timber Gulch. Impacts will be short-term, occurring mainly during the construction period.

No designated floodplains would be crossed. Some narrow floodplains along streams may be spanned, with disturbance of soil and vegetation minimized. The line and construction activities will not alter floodplain characteristics or create the potential for greater loss of life or property during flooding.

No wetlands were identified along this corridor. Therefore, no action would take place in a wetland or foster development of a wetland.

Plants and Animals

Plants

Direct and long-term moderate impacts would occur on 19.1 miles of the forest community from Elkhorn Creek to the Boulder Valley, and from Sugarloaf Mountain west, where removal of trees from under and along the transmission lines would be required. Within the 19.1 total miles of forest community, nine miles have been maintained until recently for the Salt Lake City to Helena toll telephone line. The right-of-way width is 100 feet, and only young trees are growing within the right-of-way. Most of these young trees could remain after the right-of-way was cleared for the transmission line. During the life of the project, the remaining 10.1 miles would be converted from a forest community to a shrub and/or grassland community. Upon removal of the line, it would take approximately 50-100 years more for the area under the line to return to status as a forest community.

Animals

Winter-spring habitat for elk and deer and general range for moose occurs in the forested area between Elkhorn Creek and McCarthy Creek. Part of this forested habitat, judged to be more valuable than nonforested habitat because of the thermal cover it provides during winter months, would be cleared for the life of the transmission line. Direct short-term effects from forage loss and direct long-term effects from thermal cover loss would be high. These impacts could be reduced and could ultimately result in beneficial effects if increased forage production occurs in the cleared areas.

Key winter elk range would be crossed between Basin Creek and Alta Gulch. Removal of tree cover in the key winter range would reduce availability of thermal cover and hiding cover for the elk during winter storms and sub-zero temperatures. Reduction in available forage due to road and tower site clearing would be a concern in the Berkin Flat area. Impacts on key elk and deer range would be high, direct, and long-term.

Adverse impacts from a line location in key elk and deer ranges could also reduce the elk and deer population overall by reducing the carrying capacity of the range, or by increasing stress on animals in these areas through the removal of escape and thermal cover, changes in microclimate, or fragmentation of habitat. Increased access into these areas for people during times when the animals are herded together could cause long-term displacement, increased harassment, and a possible increase in poaching or hunting pressure. Short-term displacement could also occur during construction activities.

The primary danger to golden eagles from the transmission line would be the increased potential for collisions with the line. However, studies of the effect of transmission lines on bird flight behavior have found collision potential to be relatively small (Meyer, 1978; Dames and Moore, 1979). Electrocution is not possible due to the structural characteristics (spacing of the conductors) of the transmission line. The major factor that could affect the nesting of golden eagles is human disturbance, which could result from construction activities and the possible increased access for humans into the area.

To avoid disturbance to eagle or other raptor nesting territory, construction activities will be prohibited within a 660-foot zone around identified nesting sites between late March and early June. Such restrictions have applied to the construction work in I-15 along the Boulder River. Similar restrictions on habitats important for elk, grouse, herons, and other wildlife are listed in the Colstrip Project EIS mitigating measures, Volume 2, Appendix A.3.3.3, page A.3.3.3.6, number 54, which will be supplied on request. They will also be repeated in and/or modified by the centerline environmental analysis.

Threatened and Endangered Species

Only two Threatened or Endangered species occur in the impact area of the proposed transmission line: bald eagle and peregrine falcon. Both species are far-ranging raptors that occur over most of North America, but no nests of either species have been confirmed in the vicinity of the project (May 1980 aerial search). Wildlife studies will monitor for confirmation of reported nests and for possible effects on these species; BPA will take whatever mitigation measures are appropriate if adverse effects are discovered. No adverse effects on either species are known to occur from transmission lines. Neither species has a designated critical habitat in the study area, so there will be no adverse effect on such habitat.

Cultural Resources

Impacts to historic or archeological sites (primarily related to turn-of-the-century mining activity) are moderate to high for much of the designated corridor. Primarily long-term direct visual impacts would occur, as the centerline location within the corridor can be adjusted physically to avoid sites. Impacts on many sites would be to the background view.

BPA will consult with the State Historic Preservation Office (SHPO) and local and regional sources to identify and determine effects on known sites, as required by the National Historic and Preservation Act of 1966.

In addition, under EO 11593, BPA will conduct an on-the-ground intensive survey of the final location of all facilities for unknown sites and will follow consultation procedures with the Secretary of Interior for eligibility criteria. BPA will also consult with the SHPO and Advisory Council on Historic Preservation (ACHP) for a determination of effect and for mitigation measures for National Register Sites.

Among the sites which could be affected by the Designated Corridor are Elkhorn, Fraternity Hall, Boulder-Hot Springs Hotel, Boulder River School Administration Building, Jefferson County Courthouse, the Boulder Historic District, the Basin Historic District including Basin and Cataract City and several other sites, the "Multiple Resource Area" identified by the Montana SHPO as extending up Basin and Cataract Creeks and containing around 150 sites, and numerous sites in the Berkin Flat area.

Archeological surveys will be conducted by BPA on the centerline within whichever corridor is selected to determine the exact location of all historic and prehistoric sites and to recommend mitigating measures for them in consultation with the State Historic Preservation Office, the Advisory Council on Historic Preservation, and the Secretary of Interior.

Esthetic Impacts

Direct, long-term, visual impacts would occur where the Designated Corridor crosses an area of high scenic quality, such as the forested mountains, in combination with an area of high viewer sensitivity such as a scenic travelway or a town. (Refer to Chapter 5 for the classifications used to determine visual impacts).

High impact areas are in the Elkhorn Mountains east of Boulder, at the Interstate 15 crossing, and along the Boulder River. High viewer sensitivity occurs along Interstate 15, and in the towns of Boulder and Basin.

Recreation

Recreation impacts of the designated corridor are generally moderate, direct, and short-term in nature. The corridor would cross a number of well-traveled roads used by recreationists for sight-seeing, picnicking, camping, and hunting. Additional roads for construction of the transmission line would have a moderate, direct, short-term effect upon use of the area by the recreationists.

Direct, long-term, high recreation impacts would be created where this corridor crosses Interstate 15. Interstate 15 is considered a scenic travelway for a large number of users with concerns for scenic and recreational values.

Land Use

Agriculture

There is no centerline location in this corridor that would avoid converting farmlands to use for the transmission line. This corridor crosses about 1.7 miles of irrigated farmland in the Boulder Valley. Lands irrigated by wheel or center pivot systems would sustain the greatest consequences, which would vary depending on final centerline location and on how the irrigation system could be modified, or on where tower sites could be located to avoid conflicts with the irrigation system. Impacts on irrigated land are rated high, and would be both direct and long-term.

Rangeland

Rangeland impacts are based on productivity of the rangeland types crossed and their ability to recover after disturbance. Rangeland in the Designated Corridor is characterized by low productivity. Its ability to recover depends upon whether there is just surface disturbance such as trampling or driving, or whether there is actual soil disturbance such as road building. Surface disturbance will not severely damage the range, and it will recover rapidly. Where there is soil disturbance, however, recovery will be slow, due mainly to the shallow soils and the short growing season. Impacts to rangeland in a three-mile area west of Thunderbolt Creek would be high, direct, and long-term.

Residential

This corridor is located close to Boulder and to several residences in the valley north of Boulder. Although no residences would be crossed or removed, indirect long-term visual impacts could occur. In the short term, the lines could be sited to minimize conflicts with existing developments. Impacts would be high where the corridor crosses the valley floor.

Commercial Forest Land

This corridor would cross about 19.1 miles of commercial lodgepole pine/Douglas fir forests rated medium in productivity and impact. From Elkhorn Creek to McCarthy Creek, and from Boulder Hill to Berkin Flat,

the area under the transmission line would not be available for commercial forest production for the life of the line, and would incur moderate, direct, long-term impacts.

Designated Management Areas

The Basin Planning Unit, crossed by the Designated Corridor, contains no specific guidance on transmission lines. The goal is to manage the vegetative cover to maintain or enhance wildlife, and to protect the esthetic quality of the area. A transmission line could conflict with this goal by removing vegetative cover and wildlife habitat and by intruding on the visual naturalness of the area. This conflict could continue for the life of the project unless management goals are reconsidered and/or modified over time.

THE BOULDER ALTERNATIVE

Geology and Soils

Approximately 11 miles of the corridor would be at or above 6500 feet in elevation, posing problems with ice loads on conductors and towers. Stronger towers and shorter spans would be needed to keep ice loads from causing failure of the towers.

Landslide hazard is moderate or lower from Elkhorn Creek to near Basin Creek. The hazard increases to moderate to severe between the Basin Creek and Alta Gulch areas. The required earthmoving activity on steep slopes during construction could possibly produce the damming and siltation of streams, landscape scars, and soil loss. These results would have a direct long-term impact.

High, direct, long-term impacts on soils would occur between Elkhorn and Muskrat Creeks and between Interstate 15 and the vicinity of Basin Creek where sandy and granitic soils could erode severely and be difficult to stabilize. Detailed geologic investigations and precautions against slope failure will be necessary. These and similar areas will require gentle road grades, extra drainage structures, extra precautions for road surfacing, and other precautions such as seeding and mulching exposed soil, use restrictions during wet soil conditions, topsoil replacement, and leaving 200-foot-wide buffer strips along streams.

Water Resources

Potential erosion (see above) could increase sediment pollution hazards in surface waters. Impact would be high from Elkhorn Creek to McCarthy Creek and between Interstate 15 and Basin Creek. The impacts would be

only short-term if soil stabilization efforts outlined in the Colstrip Project EIS mitigation measures are successful. Otherwise, impacts would tend to be long-term.

Impacts to floodplains or wetlands would be as described for the Designated Corridor.

Plants and Animals

Plants

Impacts to plant communities would be similar to those discussed for the Designated Corridor. Approximately 26 miles of forested area would be crossed.

Animals

General habitat for elk and moose in the forested areas between Elkhorn Creek and Muskrat Creek would be crossed. This area also contains high quality fishing streams. Construction and maintenance of roads would increase sediment in the fishery habitat. Culverts in the streams would potentially block free movement of fish within the streams. Impacts on terrestrial wildlife would be short-term, whereas fishery habitat impacts could be long-term if proper mitigation is not accomplished.

Key winter elk and mule deer range, crossed between Basin Creek and Alta Gulch, would sustain high, direct, long-term impacts through removal of important thermal and hiding cover. Additional roads along the corridor would increase the potential for poaching during the winter months when the animals congregate. Other impacts to elk and deer would be similar to those addressed for the Designated Corridor.

Threatened and Endangered Species

Impacts would be the same as those discussed for the Designated Corridor.

Cultural Resources

Consultation procedures and the same types of impacts would be similar to those for the Designated Corridor, and may be referred to in that discussion.

Individual sites, however, would differ. The Boulder Corridor is located from four to six, or more, miles from Boulder and would be expected to

have correspondingly diminished visual impacts to sites near Boulder, such as the Boulder Hot Springs Hotel or Jefferson County Courthouse.

The Boulder Corridor crosses close to Wickes and the Wickes Historic District, and may visually affect the Wickes Tunnel or several sites clustered around Wickes. It also passes near Comet, and then enters the Cataract and Basin Creek "Multiple Resource Area" as it rejoins the Designated Corridor. Most impacts from the Boulder Corridor would be high, direct, and long-term.

Esthetic Impacts

Visual impacts are high in the forested areas between Elkhorn Creek and Amazon and at the crossing of Interstate 15, as well as between Deer Creek and Torpy Gulch. The line would present strong contrasts with farmland, would cross vegetation types rated intermediate in their capability to absorb the intrusion of the line, and would cross foreground or middle-ground areas where viewers are more sensitive to the intrusions. Impacts would be direct and long-term.

Areas rated moderate or low in visual impact either are at greater distances from the viewers or are characterized by lesser contrasts with vegetation or land form.

Recreation

Recreation impacts are high between Elkhorn Creek and Interstate 15. High visual quality, suitability of the area for recreation, the presence of the Elkhorn Wilderness Study Area, and the scenic travelway along Interstate 15 contribute to the rating. The centerline could be located outside the Elkhorn Wilderness Study area to avoid the impact. The presence of the powerline will not directly preclude recreational activities but, rather, could create a psychological effect on the recreationist.

Land Use

Agriculture

This corridor affects no agricultural lands and would avoid converting farmlands to use for the transmission line.

Rangeland

Impacts to rangeland for this alternative are the same as those discussed for the Designated Corridor: primarily direct, low, and short-term in nature, unless severe soil disturbance occurs.

Residential

The Boulder Alternative avoids residences and populated areas in the Boulder Valley and Basin areas.

Commercial Forest Land

This alternative would cross about 25.9 miles of commercial lodgepole pine/Douglas fir forest, which is rated moderately productive. Impacts would be direct and moderate, and would last for the life of the project.

Designated Management Areas

A portion of the Boulder corridor lies within the boundary of the Elkhorn Wilderness Study Area. However, the centerline could be located outside the Elkhorn Wilderness Study Area to avoid this impact.

THE BASIN ALTERNATIVE

The Basin Alternative is identical to the Boulder Alternative between Elkhorn Creek and Uncle Sam Gulch. For environmental consequences of that section, see the Boulder Alternative. Impacts of the Basin Alternative between Uncle Sam Gulch and Alta Gulch are discussed below.

Geology and Soils

Approximately 8.5 miles of the corridor would be at or above 6500 feet in elevation, with the accompanying icing problems (see Geology and Soils, Boulder Alternative). The landslide hazard from Basin Creek to Alta Gulch is rated moderate to severe. Granitic bedrock and soils between Uncle Sam Gulch and Basin Creek are rated poor for construction of a transmission line. More stable volcanic soils between Basin Creek and Alta Gulch are rated fair. Impacts to geology and soils would be direct and long-term. Proper mitigation, as specified in the measures from the Colstrip Project EIS, should reduce and control those impacts. Special precautions addressed for the Designated Corridor would also be applicable here.

Water Resources

The impact of sediment to surface water is high between Uncle Sam Gulch and Basin Creek, an area where the erosion potential of sandy soils is severe. The potential for erosion and sedimentation would occur during construction of the transmission line and would be short-term. There would be some erosion and sedimentation as long as the roads were in place. The relatively more stable volcanic soils between Basin Creek and Alta Gulch would have moderate short-term impacts to surface waters.

Impacts to floodplains or wetlands would be as described for the Designated Corridor.

Plants and Animals

Plants

The Basin Alternative would cross about 26.2 miles of forest community between Uncle Sam Gulch and Alta Gulch. Impacts to the forest plant community would be high and direct because of the change from forest to shrub or grassland under and adjacent to the transmission line. The change would be long-term, for the life of the project.

Animals

Impacts would be similar to those of the Boulder Alternative. The Basin Alternative, however, would cross only the northern fringes of the key winter elk range between Basin Creek and Alta Gulch. Impacts would still be direct, high, and short-term.

Threatened and Endangered Species

Impacts would be identical to those of the Designated Corridor.

Cultural Resources

The Basin Alternative would cause the same type of impacts and undergo the same consultation procedures as the Designated Corridor. It also would share impacts with the Boulder Corridor as far west as Uncle Sam Gulch. (See Designated Corridor and Boulder Alternative discussions.)

The Basin Alternative would cross an area between Uncle Sam Gulch and Alta Gulch where there are relatively few sites compared to the Basin or

Wickes areas, except for a cluster of sites north of Berkin Flat. Impacts again would be direct, long-term, high, and primarily visual in nature.

Esthetic Impacts

Impacts from Uncle Sam Gulch to Alta Gulch would be moderate, as the corridor would not be readily visible from most viewing sites. Impacts would be direct and long-term.

Recreation

Recreation impacts for this portion of the Basin Alternative are similar to those discussed for the Designated Corridor.

Land Use

Agriculture

No agricultural land is crossed by the Basin Alternative; therefore this alternative would avoid converting farmlands to use for the transmission line.

Rangeland

Impacts on rangeland from the Basin Alternative are the same as those of the Designated Corridor.

Residential

The Basin Alternative avoids residences and populated areas, staying out of the Boulder Valley floor and away from Basin.

Commercial Forest Land

The entire Basin Alternative would cross about 26.2 miles of commercial forest land, of lodgepole pine/Douglas fir. These commercial forest lands are moderately productive. The consequences are rated moderate and direct, and would persist for the life of the transmission line.

Designated Management Areas

The Basin alternative crosses the Basin Planning Unit of the Deer Lodge National Forest. Impacts would be as described for the Designated Corridor.

Table 2. Comparison of Boulder-Basin Alternatives

Resource Area	Designated	Boulder	Basin
Length (Miles)	25.8	29.1	29.4
Fish & Wildlife	150	186	176
Land Suitability	117	163	162
Surface Water	63	89	89
Vegetative Cover	176	221	223
Unique Natural Resources	0	10	10
Agriculture	14	0	0
Commercial Forestland	115	157	158
Range	26	29	29
Recreation	112	151	152
Designated Management Areas	C	C*	C*
Prehistoric/Historic	146	179	189
Human Population	65	72	83
Visual Resources	210	236	238
Total Impacts	1194	1493	1509
Per Mile Impacts	46.3	51.3	51.3
<hr/>			
Irrigated Farmland (Mi.)	1.7	0	0
Non-irrigated Farmland (Mi.)	0	0	0

C - Conflict with management goals or objectives of Basin Planning Units.

* - Potential conflict with Elkhorn Wilderness Study Area with Elkhorn Wilderness Study Area could be avoided during centerline location.

**TABLE 3 CORRIDOR EVALUATION SUMMARY BOULDER – BASIN
AREA CORRIDORS MAJOR ENVIRONMENTAL
CONSIDERATIONS**

CRITERIA	DESIGNATED	BOULDER	BASIN
1. ENVIRONMENTAL IMPACT FROM NUMERICAL ANALYSIS	46.3 miles Lowest	51.3 miles Second Highest	51.3 miles Highest
Numerical score	1194	1493	1509
2. AGRICULTURAL IMPACT	1.7 Miles of Irrigated Land; 0.0 miles dryland	Crosses no agricultural land	Crosses no agricultural land
3. IMPACTS TO RESIDENCES AND INHABITED AREAS	Crosses Boulder Valley near Boulder	Goes north of Amazon, around valley	Goes north of Amazon, around valley
4. COMMERCIAL FOREST LAND IMPACTS (MILES)	Lowest 19.1 miles	Second Highest 25.9 miles	Highest 26.2 miles
Numerical score	115	157	158
5. VISUAL IMPACTS	Crosses widest part of Boulder Valley, near Boulder, crosses I - 15 in middle of valley	Goes around end of valley, crosses I-15 at top of Boulder Hill	Goes around end of valley, crosses I-15 at top of Boulder Hill
6. THREATENED AND ENDANGERED SPECIES	No identified impacts	No identified impacts	No Identified Impacts
7. FISH AND WILDLIFE HABITAT IMPACTS	Lowest Crosses most miles/Boulder River key winter area, least big game general range	Highest Crosses second most miles/Boulder River elk herd key in winter area, second most big game winter range	High Crosses least Boulder River elk herd key winter area, most big game general range
Numerical score	150	186	176
8. IMPACTS TO FEDERAL REGISTER AND HISTORIC/ARCHEOLOGIC SITES	Lowest Closest to Basin, and Boulder Historic Districts	Second Highest Close to Basin Historic District, Wickes Historic District	Highest Close to Wickes Historic District
9. SPECIAL MANAGEMENT AREAS AND UNIQUE RESOURCE IMPACTS	Crosses Basin Planning unit (No specific guidance on transmission lines)	Portion of corridor crosses Elkhorn WSA,(avoidable by centerline location) Crosses Basin Planning unit (no specific guidance on transmission lines)	Portion of corridor crosses Elkhorn WSA,(avoidable by centerline location) Crosses Basin Planning unit (no specific guidance on transmission lines)

**TABLE 4 CORRIDOR EVALUATION SUMMARY
BOULDER – BASIN AREA CORRIDORS
PROJECT DEVELOPMENT AND
JURISDICTORIAL CONSIDERATIONS**

ITEM	DESIGNATED	BOULDER	BASIN
1. CONSTRUCTION COSTS (MILLIONS OF DOLLARS)	Least \$23.1 (25.8 Miles)	Middle \$24.0 (29.1 Miles)	Most \$25.3 (29.4 Miles)
2. FEDERAL AND STATE LAND CROSSED (MILES)	17.6 Least	20.7 Second Most	21.7 Most
3. PARALLELING OF EXISTING POWER LINES (MILES)	None	None	None
4. ESTIMATED COSTS OF ELECTRICAL LOSSES (MILLIONS OF DOLLARS, FOR LIFE OF FACILITY)	\$5.5 Lowest	\$6.2 Highest	\$6.2 Highest
5. MAJOR AGENCY OR GROUP RECOMMENDATIONS	North Boulder Protective Association Opposed This Corridor EPA believes this corridor to be the best compromise		

COMPARISON OF THE ALTERNATIVES

Method

Environmental impacts for the Designated Corridor and the Boulder and Basin Alternatives were measured using the same methodology (see Appendix F, Methodology) as that used in the Colstrip Project EIS and TER so that a direct comparison could be made. Impact scores for the Boulder-Basin Alternatives are compared in Table 2. Entries for each corridor show the total impacts for each environmental resource. The separate environmental impacts are then added for a total impact by corridor. The impact score per mile is calculated by dividing the total score of each corridor by its length. The higher the number, the greater the impacts within a corridor.

Findings

The information summarized in Tables 2, 3, and 4 is discussed briefly below. Table 3 summarizes the 9 major Environmental Evaluation Criteria listed on page 1-12. Table 4 summarizes the 5 items listed as Project Development and Jurisdictional Criteria on pages 1-12 and 1-13. Environmental Criteria were developed from public and agency comments obtained early in the process. Project Development and Jurisdictional Criteria were developed from public and agency comments as additional items to be considered in the decision.

Compared to the alternative corridors in the Boulder-Basin Area (see Table 2 and Table 3), the Designated Corridor would have the highest impacts on agricultural land because it crosses irrigated land. The Designated Corridor would have the lowest impacts on commercial forest land, fish and wildlife habitat, and historic/archeological sites. It would also have the lowest total impact, and the lowest impact per mile of any alternative.

The Boulder Alternative would have the highest impacts on fish and wildlife habitat and on land suitability. It would have the highest impacts equally with the Basin Alternative for surface water and for unique natural resources. It would not affect irrigated or non-irrigated agricultural land. The Boulder Alternative would have a moderate to high impact on esthetics as compared with the other corridors. It would have the second highest total impact and the second highest per mile impact.

The Basin Alternative would have the highest impact on commercial forest land, vegetative cover, recreation, historical/archeological sites, human population, and visual resources. It would have the highest impacts equally with the Boulder Alternative for surface water and for unique natural resources. Impacts on the remaining resource areas would be

second highest, except that it crosses no irrigated land. It would have the highest total impact of the alternatives and the highest per-mile impact.

The environmental information summarized in Table 2 indicates that the overall environmental impacts, as determined by the TER method, are less for the Designated Corridor than for the Boulder or Basin Alternatives.

In Table 3, the Designated Corridor is shown as lowest for four (criteria No.'s 1, 4, 7 and 8) of nine environmental criteria selected for evaluating the alternatives. Also in Table 3, it is indicated that the Designated Corridor is highest for three criteria (No.'s 2, 3, and 5). These three criteria were issues emphasized by the local landowners and residents as important to them and their lifestyles.

Comparison of the Project Development and Jurisdictional Considerations are summarized in Table 4. Due to a shorter length, both construction and electrical losses are the lowest for the Designated Corridor. Fewest miles of Federal and State lands are crossed by the Designated Corridor.

An alternative to the Designated Corridor in the Boulder-Basin Area is not clearly evident from the analysis. Local residents and the Northern Boulder Protection Association have made it known that the Designated Corridor does not fit their values and expectations for the Boulder Valley. The local landowners have emphasized avoiding agricultural lands because of those lands' importance in sustaining their livelihood. Residents and landowners have also emphasized their feeling that the transmission line should not cross the valley floor, and should cross as much State and Federal land possible.

Both the Boulder and Basin Alternatives avoid irrigated agricultural lands. The Boulder and Basin Alternatives also avoid crossing the Boulder Valley floor. The Boulder and Basin Alternatives use more public lands than the Designated Corridor. The Boulder and Basin Corridors would have the fewest impacts upon the values and lifestyles important to the local landowners and residents.

The Designated Corridor and Boulder Alternative contain an old telephone right-of-way where trees, until recently, have been kept cleared. The right-of-way is available for other uses.

The North Boulder Protection Association opposes the Designated Corridor.

The Environmental Protection Agency has commented that the Designated Corridor appears to be the best compromise in the Boulder-Basin area.

A L T E R N A T I V E S I N T H E D E E R L O D G E A R E A

This is Chapter III, which presents the environmental consequences and mitigation measures for the alternatives in the Deer Lodge Area in accordance with 40 CFR 1502.10e and g. The Black Mountain +AAA Alternative is the preferred corridor of the three Federal agencies.

Transmission facility design and construction characteristics are discussed in Appendix A, pages A-1 through A-8.

DESCRIPTION OF THE ALTERNATIVES

Designated Corridor

The Designated Corridor for the Deer Lodge area (see Figure 4) begins near Finn Gulch and proceeds westerly across Boyle Gulch, Thunderbolt, Trapper, Little Cottonwood, Rock, and Indian Creeks. It crosses the Continental Divide near Cold Springs and continues westerly to a point north of Saratoga Mountain, along Peterson Creek. There the Designated Corridor turns northwesterly, following Peterson and Caribou Creeks to a point about 1.5 miles east of Interstate 90. The Corridor then turns westerly, crossing the Clark Fork River near the mouth of Dempsey Creek. It then crosses Interstate 90, the Burlington Northern and Milwaukee Railroads, and passes through proposed Substation Site 1 located between Powell and Dempsey Creeks along the existing BPA and MPC transmission lines. The Designated Corridor then turns north, following the existing BPA and MPC 230-kV transmission lines across Powell and Tin Cup Joe Creeks, and passes through proposed Substation Site 2 near Spring Gulch and Mullan Gulch. The Corridor then turns northwesterly, crossing Rock, Willow, and Pikes Peak Creeks. Near Pikes Peak Creek, the Corridor turns more westerly and continues along the existing lines to proposed Substation Site 3 near Gold Creek.

Alternative A

The corridor alternative at the north end of the Deer Lodge Valley has undergone considerable evolution from the first proposal, Alternative A. Two variations for the Continental Divide crossing have been proposed, as well as three distinct locations across the north end of the valley. All variations share a common section from Emery Mine across Fred Burr Creek to Helena Gulch. The distinct angle point north of Fred Burr Creek in the middle of the common section was selected as the common break point between the two Continental Divide crossings and the corridor variations across the north end of the Deer Lodge Valley. To include all possible alternatives for public review and comment and to simplify their presentation in this supplement, the corridors have been broken down into the Thunderbolt Mountain and Black Mountain Alternatives, from Finn Gulch

across the Continental Divide to Fred Burr Creek, and Alternatives A, AA, and AAA from Fred Burr Creek across the Deer Lodge Valley to Gold Creek. A description of the variations on Alternative A follows.

Thunderbolt Mountain Alternative

This alternative leaves the Designated Corridor west of Finn Gulch and bears northwesterly across Boyle Gulch, Thunderbolt, Little Cottonwood, and Rock Creeks. It crosses the Continental Divide between Electric Peak and Black Mountain and continues in a northwesterly direction down the Middle Fork of Cottonwood Creek, across the North Fork of Cottonwood Creek and Rocker Gulch to an angle point near the Emery Mine. There the corridor turns north across Baggs Creek and terminates at the angle point north of Fred Burr Creek.

Black Mountain Alternative

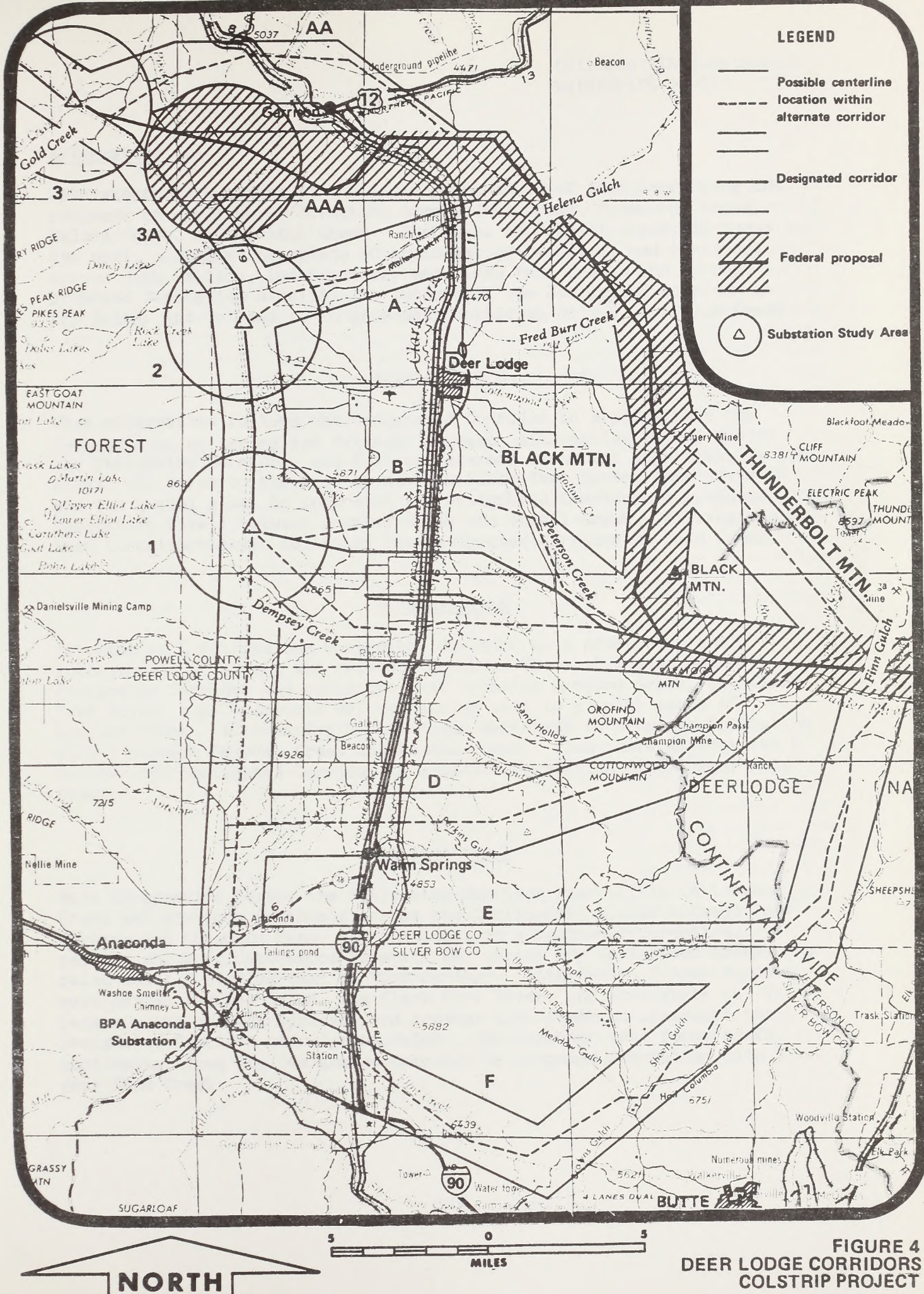
This alternative follows the Designated Corridor from Finn Gulch to a point west of the Continental Divide, near the head of Peterson Creek. There it turns north, crosses Cottonwood Creek, passes near the Emery Mine, crosses Baggs Creek, and continues to the angle point north of Fred Burr Creek.

Alternative A

Beginning at the angle point north of Fred Burr Creek, Alternative A turns northwesterly across Jake Creek, Freezeout Creek, and Helena Gulch. At a point north of Helena Gulch, it turns southwest, crossing Interstate 90 and the Clark Fork River. From the river, Alternative A follows Mullan Gulch to proposed Substation Site 2 near Spring Gulch in the Designated Corridor. From proposed Substation Site 2, Alternative A follows the Designated Corridor to proposed Substation Site 3 near Gold Creek.

Alternative AA

Beginning at the angle point north of Fred Burr Creek, Alternative AA bears northwesterly across Jake Creek, Freezeout Creek, Helena Gulch, and O'Neill Creek, and crosses the Little Blackfoot River east of Garrison. It continues northwesterly across U.S. Highway 12 to a point approximately one mile north of Garrison. Alternative AA then turns in a westerly direction, crossing Interstate 90 near Warm Springs Creek and crossing the Clark Fork River and Independence Creek, passing near the microwave relay station. West of the microwave relay station, Alternative AA turns southwesterly across Pikes Peak Creek and Pioneer Gulch to proposed Substation Site 3 near Gold Creek.



Alternative AAA

This alternative begins at the angle point north of Fred Burr Creek and proceeds in a northwest direction across Jake Creek, Freezeout Creek, Helena Gulch, and O'Neill Creek. Northwest of O'Neill Creek, it turns to the west, crossing Interstate 90 southeast of Garrison, and continues across Rock, Willow, Independence, and Pikes Peak Creeks and through proposed Substation Site 3A. It intercepts the Designated Corridor at Dry Gulch, and follows it to proposed Substation Site 3 near Gold Creek.

Alternative B

This alternative follows the Designated Corridor to a point near the intersection of Spring and Peterson Creeks. Alternative B then leaves the Designated Corridor, and follows Peterson Creek for approximately 6.5 miles. It turns to the west across the Clark Fork River, Interstate 90 and the gravel pits, to intersect the Designated Corridor at proposed Substation Site 1 between Dempsey Creek and Powell Creek. Alternative B then turns northerly, following the Designated Corridor to Gold Creek.

Alternative C

Alternative C follows the Designated Corridor to a point near the intersection of Spring and Peterson Creeks. There it leaves the Designated Corridor and continues west crossing Orofino Creek, the Clark Fork River, and Interstate 90, continuing west to a point south of Dempsey Creek. Alternative C then turns northwest to proposed Substation site 1 between Dempsey Creek and Powell Creek. From there Alternative C follows the Designated Corridor to proposed Substation Site 3 near Gold Creek.

Alternative D

This alternative leaves the Designated Corridor near Little Cottonwood Creek and proceeds southwest across the Continental Divide between Four Corners and Champion Pass. It continues in a southwest direction, passing south of Cottonwood Mountain and across Dry Cottonwood Creek to a point about 4.5 miles east of Warm Springs. Alternative D then turns west across Perkins Gulch, the Clark Fork River, and Interstate 90. It passes north of Warm Springs, and crosses Lost Creek to intercept the Designated Corridor near Spring Gulch. The corridor then turns north, continuing along the Designated Corridor to proposed Substation Site 3 near Gold Creek.

Alternative E

This alternative leaves the Designated Corridor near Finn Gulch and proceeds in a southerly direction crossing Dry, Kit Carson, Main, Morrow, Swede, and Olson Gulches, while paralleling Lowland Creek to Lowland Campground. Alternative E then turns west, crossing the Continental Divide and Alaska, Browns, Flume, and Telegraph Gulches. It crosses Interstate 90 and the Anaconda tailing ponds north of Opportunity. This alternative intersects the existing BPA and MPC transmission lines west of the tailing ponds and follows them north to Dempsey Creek and proposed Substation Site 1. From there, Alternative E follows the Designated Corridor to proposed Substation Site 3 near Gold Creek.

Alternative F

Alternative F follows the same alignment as Alternative E to Lowland Campground. There Alternative F turns southwest, crossing the Continental Divide south and west of Lowland Campground. It continues southwesterly along Hail Columbia Gulch and across Browns Gulch about 2 miles north of Ramsey. There the corridor turns northwest across Sheep Gulch, Spring Creek, Interstate 90, and Silver Bow Creek to BPA's Anaconda Substation. Alternative F then follows the existing BPA and MPC 230-kV transmission lines to the Designated Corridor and Substation Site 1 at Dempsey Creek, and the Designated Corridor to proposed Substation Site 3 near Gold Creek.

ENVIRONMENTAL CONSEQUENCES

In the original EIS, environmental consequences were discussed by impact. For instance, impacts to wildlife in all alternative corridors were discussed together. In this supplement, environmental consequences are discussed by alternative corridors, in order to make it easier to understand the overall combination of impacts or consequences for each corridor. (Exceptions are discussions of Climate, Air Quality, Land Use Plans, and Social and Economic Factors, which can be summarized for all alternatives.) Table 5 lists the miles of high, moderate, or low impact by resource for each corridor, and is the raw data for Table 7, the numerical corridor analysis. Table 6 lists the miles of farmland (irrigated and non-irrigated) for each of the alternatives.

A summary of the EIS consequences discussion, emphasizing impacts generally associated with building and operating a large transmission line in the study area, is presented in Appendix B to this Supplement. Appendix C discusses electrical and biological effects of transmission lines. The impacts for each alternative are illustrated in the impact rating maps, Appendix E to this supplement. Note that each of the

Table 5. MILES OF HIGH, MODERATE, OR LOW IMPACT BY RESOURCE AREA, DEER LODGE CORRIDORS

Resource	Designated			Thunderbolt +A			Thunderbolt +AA			Thunderbolt +AAA			Black Mountain +A			Black Mountain +AA			Black Mountain +AAA			B			C			D			E			F		
	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L
Fish and Wildlife	4.0	16.5	17.3	3.6	13.8	20.3	3.6	8.5	23.7	3.6	9.6	22.6	5.3	13.8	22.6	5.3	8.5	26.0	5.3	9.6	24.9	5.1	14.9	17.7	4.8	15.5	17.4	6.4	17.0	24.7	2.5	17.0	38.7	2.0	17.0	44.4
Land Suitability	5.3	6.5	26.0	.8	14.9	22.0	.8	18.3	16.7	.8	14.9	20.1	5.0	14.7	22.0	5.0	18.1	16.7	5.0	14.7	20.1	5.2	8.1	24.4	5.9	2.5	29.3	6.2	12.9	29.0	7.2	19.3	31.7	9.2	15.6	38.6
Surface Water	4.9	5.2	27.7	.8	12.0	24.9	.8	12.0	23.0	.8	12.0	23.0	5.0	2.1	34.6	5.0	2.1	32.7	5.0	2.1	32.7	6.3	4.7	26.7	6.5	3.1	28.1	7.4	6.0	34.7	7.8	13.6	36.8	3.7	15.5	44.2
Vegetative Cover	13.7	17.9	6.2	17.1	15.9	4.7	12.8	19.5	3.5	14.7	16.5	4.6	21.0	16.0	4.7	16.7	19.6	3.5	18.6	16.6	4.6	15.1	18.2	4.4	15.1	15.9	6.7	18.2	24.5	5.4	24.5	29.2	4.5	21.5	34.4	7.5
Unique Natural Resources	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.4	0	0	0	0	0	1.2	0	0	.6	0	0	.1	0	0
Agricultural Land	4.4	1.8	0	4.7	0	0	3.5	0	0	4.6	0	0	4.7	0	0	3.5	0	0	4.6	0	0	4.2	.6	0	5.5	1.2	0	5.4	0	0	4.5	0	0	6.0	1.6	0
Commercial Forestland	0	13.7	0	0	17.1	0	0	12.8	0	0	14.7	0	0	21.0	0	0	16.7	0	0	18.6	0	0	14.7	0	0	15.1	0	0	17.0	0	0	23.9	0	0	21.4	0
Rangeland	2.8	0	35.0	5.5	0	32.2	5.5	0	30.3	5.5	0	30.3	2.8	0	38.9	2.8	0	37.0	2.8	0	37.0	2.8	0	34.9	2.8	0	34.9	1.6	0	46.5	0	0	58.2	0	0	63.4
Recreation	2.0	19.2	16.6	2.0	12.8	22.9	12.5	11.8	11.5	11.7	12.4	11.7	2.0	16.9	22.8	12.5	15.9	11.4	11.7	16.5	11.6	2.0	12.3	23.4	2.0	14.1	21.6	12.3	13.7	22.1	10.3	24.4	23.5	10.3	18.3	34.8
Designated Management Areas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.0	0	0	0	0	0	0	0	0
Prehistoric/Historic	1.0	3.3	33.5	3.0	7.3	27.4	3.0	9.3	23.5	2.0	9.3	24.5	2.0	6.3	33.4	2.0	8.3	29.5	1.0	8.3	30.5	1.0	4.3	32.4	1.0	3.3	33.4	0	2.3	45.8	0	3.1	55.1	1.0	8.1	54.3
Human Population	1.0	12.9	23.9	1.0	12.8	23.9	0	13.1	22.7	0	14.1	21.7	1.0	16.8	23.9	0	17.1	22.7	0	18.1	21.7	1.0	13.7	23.0	1.0	10.9	25.8	1.0	10.1	37.0	7.0	8.2	43.0	4.2	22.3	36.9
Visual Resources	10.1	23.1	4.6	13.8	21.9	2.0	13.8	20.0	2.0	13.8	18.2	3.8	17.8	21.9	2.0	17.8	20.0	2.0	17.8	18.2	3.8	10.6	25.2	1.9	10.4	23.2	4.1	12.6	33.1	2.4	21.2	35.5	1.5	17.4	43.2	2.8

alternatives at the north end of the Deer Lodge Valley--Alternatives A, AA, and AAA--is discussed in combination with the Thunderbolt Mountain and Black Mountain Alternatives (for example, the Thunderbolt Mountain +A Alternative or the Black Mountain +A Alternative). This would make a total of six routes.

Discussions of the specific impacts for each Deer Lodge alternative follows.

Mitigation

The mitigating measures discussed in Chapter 2 of this supplement (beginning on page 2-2) are also applicable to all the Deer Lodge area alternatives. Please refer to that previous discussion.

Climate, Air Quality, Noise

Environmental consequences associated with climate, air quality, and noise are general in nature and are described in Appendix B of this Supplement.

Land Use Plans

The major goal of the Jefferson County Plan, which has not been adopted or implemented, is "to enhance and preserve the rural nature of the area with no drastic changes in existing development patterns." The land use plan does not have any provisions addressing new transmission line locations, therefore those alternatives would not be inconsistent with the plan. Road and transmission line construction and visual impacts, in the immediate visual impact area of the line would conflict with the goal of the plan.

No designated floodplains would be crossed in Jefferson County.

The goal of the Powell County Plan is "to assure that patterns of development will have a minimal adverse effect on agricultural and timber lands and critical wildlife areas". The transmission line would not conflict with this goal.

Powell County has defined standards for county roads and approaches.

Floodplain maps have been issued by HUD for the Clark Fork River in Powell County, and for Deer Lodge. The lower portion of Dempsey Creek is being considered for designation as a floodplain from Section 12, T.6N, R.10W, to the Clark Fork River. Hearings were scheduled in Deer Lodge in

January 1981. Powell County requires that permits be obtained before constructing facilities in a floodplain. Federal agencies, to comply with Executive Order 11988, Floodplain Management, must evaluate any potential effects in floodplains, including those in alternatives, in order to avoid adverse effects. (See Consultation, Review, and Permit Requirements Section.)

The Anaconda-Deer Lodge County Plan seeks to preserve existing land uses where compatible with future needs, and to change the existing land use when incompatible with the best use of land as determined by ecological, engineering, and economic planning principles. The plan does not address new transmission line locations for a project of this nature. Portions of Alternatives D and E, which would change some existing land uses, would not be the best use of the land, and therefore would not be consistent with the Anaconda-Deer Lodge County Plan.

Among the purposes of the Butte-Silver Bow Land Use Plan are the definition and preservation of the character of the Butte-Silver Bow planning area and the preservation of parks and open space. The plan does not address new transmission line locations for a project of this nature. The alternatives in Silver Bow County would parallel existing power lines or corridors, would preserve the existing character of the county, and thus would be compatible with the land use plan.

Social and Economic Factors

Social consequences are as described in the Colstrip Project EIS, Volume 1.

The cost of building the electric transmission facilities is ultimately to be borne by the rate payers.

No property tax revenues will accrue to the counties. Bonneville Power Administration does not at present have legislative authority to pay either state or local taxes on capital improvements, nor to make in-lieu-of-tax payments. The Pacific Northwest Electric Power Planning and Conservation Act does provide for impact payments to local governments beginning at some future time.

THE DESIGNATED CORRIDOR

Geology and Soils

A moderate to severe landslide hazard exists in the vicinity of the Continental Divide, where steep slopes and sandy soils would require more earthmoving. Slope stabilization would be difficult. Possible

consequences of slope failures include the damming and siltation of streams, landscape scars, and soil loss through erosion. Detailed geologic investigations and precautions against slope failures will be necessary. These and similar areas will require gentle road grades, extra drainage structures, extra precautions for road surfacing, and other precautions such as seeding and mulching exposed soil, use restrictions during wet soil conditions, topsoil replacement, and leaving 200-foot-wide buffer strips along all identifiable streams. Direct impacts would be high in that particular area, but careful construction and mitigation would limit problems to the short term.

About 3.7 miles of the Designated Corridor lies above 6500 feet in elevation. Icing conditions would occur above that elevation. With this line, the towers and conductors would be above treetop level, and the icing or snow load risk would be even greater. As a result, the line would have to be designed for stronger towers and shorter spans.

Water Resources

Accelerated soil erosion on sandy soils in the Continental Divide area would deposit more sediment in streams and drainages, a high, direct impact. Proper mitigation will render these impacts short-term.

The Designated Corridor crosses the floodplain of the Clark Fork River. There is no centerline location within the corridor that could avoid crossing the floodplain. Floodplain width makes it likely that this floodplain could be spanned, however. If not, disturbance of soil and vegetation would be minimal. Towers would be built on concrete footings designed to withstand flooding. Construction activities and the physical presence of the transmission line will not alter floodplain characteristics or create the potential for greater loss of property or life during flooding.

Plants and Animals

Plants

Direct impacts to the forest community in the Designated Corridor from Finn Gulch to Peterson Creek would be high and long-term because construction of the transmission line would require removal of most mature trees from under the transmission line, changing the forest community to a shrub or grassland community. Forest communities are limited primarily to mountainous or hilly terrain with steep slopes, thin soils, and relatively high precipitation. Trees are the major factor maintaining the stability of those communities. Grassland and shrubland communities would receive moderate short-term impacts.

Other areas where high consequences could occur are on steep, south- and southwest-facing slopes where revegetation would be difficult. Impacts would be short-term in these areas if revegetation efforts are successful.

Animals

The area around Alta and Finn Gulches is a key winter range for elk and deer. Removal of trees would reduce the amount of thermal cover and hiding cover available to the approximately 300 elk that winter in this area. These impacts would be direct and long-term. The construction of new roads and clearing for tower sites would directly reduce, for a short term, the amount of available forage critical to animal survival during a severe winter. Steep valley slopes and deep accumulations of snow limit the elk dispersal outside the area. Information is not available on any biological effects the 500-kV transmission line might have upon the elk herd under severe winter conditions when elk would be forced to stay close to the transmission line. A study will be made to obtain information on any biological effects caused by the 500-kV transmission line, as discussed under mitigation on page 2-2.

The Berkin Flat area is a key winter range for deer and elk and is also an elk calving ground. The amount of winter and spring time forage in the area is important to health and survival of the elk and deer. Also near the Continental Divide are additional elk calving grounds and elk and deer winter ranges.

Direct, adverse, long-term impacts associated with the transmission line in key elk and deer ranges could indirectly reduce the overall elk and deer population in the long term. Altering their habitat could reduce the carrying capacity or increase stress on animals in these areas by removal of escape or thermal cover, changes in the microclimate, or fragmentization of habitat. Increased access into these areas for people could cause displacement, increased harassment, and a possible increase in poaching or hunting pressure. Short-term, direct displacement could also occur during construction activities.

From December 15 to May 15 each year, the key winter area and calving areas are closed to vehicle entry. Closure during the winter months is considered to be important by wildlife biologists to minimize the placing of additional stress upon the animals from human activity. Closure during the spring months is to provide solitude during the calving period.

On the west side of the Deer Lodge Valley, along Powell and Dempsey Creeks, the corridor crosses south-facing slopes identified by the Montana Department of Fish, Wildlife, and Parks as critical elk and deer winter range for approximately 175 elk. Impacts would be moderate and short-term until revegetation is complete. Upon revegetation of the area, any additional forage under the transmission line may be beneficial to the elk and deer.

The timbered slopes and edges of the timber of the west side of Crevice and Gold Creeks provide calving grounds for the Wallace elk herd. The Montana Department of Fish, Wildlife, and Parks strongly objects to any disturbance in those areas.

Impacts in these key winter range and calving areas would be high, direct, and short-term.

The primary impact to golden eagles or other large birds which have been reported in the area would be the increased potential for collisions with the line. However, studies of the effect of transmission lines on bird behavior have found collision potential to be relatively small (Meyer, 1978; Dames and Moore, 1979). Electrocution is not possible due to the structural characteristics (spacing of conductors) of the transmission line.

The major factor that could affect the nesting of golden eagles is human disturbance, which could result from construction activities and the possible increased access for humans into the area.

To avoid disturbance to eagle or other raptor nesting territory, construction activities will be prohibited within a 660-foot zone around identified nesting sites between late March and early June. Such restrictions have applied to other projects, such as the construction of I-15 along the Boulder River.

Similar restrictions on habitats important to other wildlife such as elk, grouse, and herons will be applied as listed in the Colstrip Project EIS mitigation measures, Volume 2, page A.3.3.3-6, number 54. A copy of those measures will be provided on request.

Mitigating measures will be repeated in, and/or modified by, the centerline environmental analysis.

Threatened and Endangered Species

The bald eagle has been sighted in the Boulder River and Basin area. Although a helicopter flight was made in May 1980 to assess the possibility of nests in the area, no nests were found. Bald eagles are known to pass through this area during their annual migrations. No significant impacts to the bald eagle or its critical habitat are anticipated.

A grizzly bear was killed within the Designated Corridor, on the west side of the Continental Divide, in May 1980. No information is available on the extent of grizzly bear use or distribution in the area. Another grizzly bear sighting was reported along the Continental Divide near Deer Lodge. There is suitable habitat for the bears in the area, but these

sightings are presumed to be accidental and not indicative of a viable population. The main impact of the transmission line upon the grizzlies would be disturbance from increased access and human activity. Because of the present highly developed nature of the area, with roads, logging, mining, and cattle grazing, it is unlikely that a transmission line would create any additional adverse consequences on grizzlies or on their critical habitat.

The proposed candidate to the threatened and endangered plant species list, Grindelia howellii, Howell's gumweed, is found in the Clearwater Valley of Missoula and Powell Counties in the Swan Range, in larch/Douglas fir forests, on rocky granitic crags at 3800 to 4400 feet elevation. This species should not be affected because there are no larch/Douglas fir forests found along this corridor.

Cultural Resources

Primarily direct, long-term visual impacts would occur to cultural resources within the Designated Corridor (see the Prehistoric and Historic impact ratings map). Concentrations of sites in the Berkin Flat, Deer Lodge, and Gold Creek areas would be affected.

BPA is consulting with local and regional authorities and with the State Historic Preservation Office on known sites, and will conduct an intensive survey for previously unidentified sites in all areas to be disturbed (right-of-way, tower sites, roads, communication sites, etc.). If the survey identifies any site which will be affected and which also meets National Register Criteria, BPA will request an eligibility determination of the Secretary of Interior, and will consult with the State Historic Preservation Officer and Advisory Council on Historic Preservation both for findings of effect and for appropriate mitigating measures.

Esthetic Impacts

The Designated Corridor crosses the proposed Continental Divide National Scenic Trail (which does not have a specific location at present) and would be visually obtrusive to some users of the trail. It would be possible to look both east and west from the Continental Divide down any transmission line location. Some alignments would be more readily visible than others, especially if the route were to be located off the Divide. Impacts would be high, direct, and long-term.

In heavily forested areas on the east side of the Deer Lodge Valley, areas cleared of trees would be visible from roads along the Boulder

River and in the Deer Lodge Valley. The line would present contrasts to both land forms and vegetation in near-to-middle viewing distances where viewer sensitivity is high.

On the east side of Deer Lodge Valley, the corridor is aligned with the topography as it descends westward toward Interstate 90. Near Interstate 90, some towers and portions of the transmission line could be skylined, depending upon final location. The right-angle crossing of Interstate 90 provides for the least visual impact. The visual impacts will still be high, however, as the transmission line will not be visually absorbed by either land forms or vegetation. In the valley bottom, where sensitivity is high, land form and vegetation will be better able visually to absorb the transmission line.

On the west side of the valley, the land forms and vegetation are intermediate in their ability to visually absorb the line, and viewer sensitivity remains high. Impacts are rated moderate.

Recreation

Most consequences to recreation are moderate or low, long-term, and indirect. The corridor avoids areas such as wilderness, roadless areas, and high-use areas which would sustain the greatest recreation impacts.

The scenic travelway along I-90 and the Continental Divide National Scenic Trail would be crossed. Both areas would be affected as described in Esthetic Impacts. Recreation impacts would be high, indirect, and long-term.

Land Use

Agriculture

There are no Prime or Unique farmlands in the Deer Lodge Valley.

Landowners in Deer Lodge Valley identified the issue of avoiding all irrigated land as particularly important. All private and State irrigated lands in the Deer Lodge Valley were plotted on a map, using August 1979 aerial photography presently available at the Soil Conservation Office in Deer Lodge, and supplemented by DNR/SCS land use maps. The Designated Corridor would cross 4.4 miles of irrigated land and 1.8 miles of non-irrigated lands (Table 4). There is no centerline location within the Designated Corridor which would avoid converting farmlands to use for the transmission line.

Lands irrigated by wheel or center pivot systems would sustain the greatest consequences. These consequences would vary, depending on final

centerline location and on how the irrigation system could be modified, or on tower location. Impacts on irrigated land or land planned for irrigation are rated high, direct, and long-term. Impacts on non-irrigated land are rated moderate and short-term, except at access road and tower locations, where impacts would be moderate, direct, and long-term.

Rangeland

Rangeland impacts are based on productivity of the rangeland types which would be crossed and their ability to recover after disturbance.

All of the rangeland in the Designated Corridor is of low productivity. The short section of subalpine area at the north edge of the corridor between Finn Gulch and Rock Creek would be very easily damaged and would be slow to recover after any kind of surface or soil disturbance. Impacts to subalpine rangeland would be high and long-term.

For the remainder of the corridor, the ability of the range to recover depends upon whether there is surface disturbance, such as trampling or driving, or whether there is actual soil disturbance such as road building. Limited surface disturbance will not severely damage the range, and it will recover rapidly. In those areas, impacts would be direct and short-term. Where direct soil disturbance occurs, recovery will be slow, due mainly to the shallow soils and the short growing season. Direct impacts to rangeland in these areas would be high and long-term.

Residential

This corridor would cross the populated Deer Lodge Valley about six miles south of Deer Lodge. No buildings or farmsteads would be directly affected if a line were built in this corridor, as centerline location can be adjusted to avoid them. Impacts are moderate. Direct, long-term visual impacts would occur.

Commercial Forest Land

Where the corridor crosses about 13.7 miles of commercial forest land, from near Alta Gulch westward across the Continental Divide, impacts are moderate. In this area, volumes are sufficient, and topography is such that it is economically possible to manage for timber production. Lodgepole pine/Douglas-fir forests are moderate in productivity. Impacts would be direct, moderate, and long-term.

Designated Management Areas

This corridor would cross about ten miles of key big game winter range for elk and deer (see Animals).

Table 6.

Corridor	Miles of Farmland Crossed					
	By Each Corridor			By Buildable Centerline Within Each Corridor		
	Irrigated	Non-		Irrigated	Non-	
		Irrigated	Total		Irrigated	Total
Designated	4.4	1.8	6.2	3.3	2.6	5.9
Thunderbolt +A	4.7	0	4.7	4.9	0	4.9
Thunderbolt +AA	3.5	0	3.5	2.0	.6	2.6
Thunderbolt +AAA	4.6	0	4.6	.8	0	.8
Black Mtn. +A	4.7	0	4.7	4.9	0	4.9
Black Mtn. +AA	3.5	0	3.5	2.0	.6	2.6
Black Mtn. +AAA	4.6	0	4.6	.8	0	.8
B	4.2	.6	4.8	4.2	1.7	5.9
C	5.5	1.2	6.7	6.2	1.2	7.4
D	5.4	0	5.4	5.4	0	5.4
E	4.5	0	4.5	4.5	0	4.5
F	6.0	1.6	7.6	5.3	.6	5.9

THUNDERBOLT MOUNTAIN +A ALTERNATIVE

Geology and Soils

This alternative crosses an area of moderate to severe landslide hazard from near where it joins the Designated Corridor along the west edge of the Deer Lodge Valley to the proposed Substation Site 3 near Gold Creek. Most of the steep slopes would require increased earthmoving activities, and as a result would risk an increase in slope failure. Impacts could be high and long-term if adequate steps are not taken to stabilize slopes.

Ground disturbance caused by earthmoving activity in the mountainous areas between Finn Gulch and Emery Mine would cause moderate to high impacts. These impacts would be short-term if proper restoration practices are implemented.

A small amount of sandy soils covering granitic bedrock in the area of Thunderbolt and Rock Creeks would suffer severe erosion and revegetation problems if disturbed. This would result in high, long-term, direct impacts if revegetation were not successful.

Detailed geologic investigations and precautions to prevent slope failures will be necessary. Some of the precautions would include extra drainage structures, gentle road grades, and extra precautions for road surfacing. Other precautions and measures taken would be similar to those discussed for the Designated Corridor.

About 9.3 miles of this alternative would lie above 6500 feet in elevation, with the accompanying ice and snow load risks. Shorter spans and stronger towers would be required.

Water Resources

The sandy soils between Thunderbolt and Rock Creeks (see Geology and Soils) would be highly susceptible to erosion problems and associated sedimentation in nearby streams. Direct impacts to surface waters would be high in these areas, but short-term if revegetation were successful.

Alternative A would cross the Clark Fork River floodplain, it is likely that this floodplain could be spanned. If the floodplain cannot be spanned, disturbance of soil and vegetation would be minimal. Towers would be built on concrete footings designed to withstand flooding. Construction activities and the physical presence of the transmission line will not alter floodplain characteristics or create the potential for greater loss of property or life during flooding.

Plants and Animals

Plants

The corridor from Finn Gulch to near Emery Mine is forested. Trees would be removed from under and alongside the line to maintain electrical clearances, with a change from a forest community to a shrub or grassland community. Impacts in these areas would be direct, high, and long-term.

Animals

Impacts would generally be the same as those in the Designated Corridor. Key elk and mule deer winter ranges would sustain high impacts in Cottonwood Creek and the Boulder River drainage around Finn and Alta Gulches. Removal of forest cover in the area would reduce both thermal cover and hiding cover available to the animals and would thereby cause direct, long-term impacts.

Construction of new roads and clearing for towers would reduce the amount of available forage critical to the animals' survival during severe winter months. These impacts would be high and short-term.

Threatened and Endangered Species

Impacts would be the same as those discussed for the Designated Corridor.

Cultural Resources

About seven miles of this route, in various locations, would have moderate visual effects on cultural resources. About 3 miles of the route would have high impacts. The closest site to the corridor would be the Emery and Hidden Hand Mines. This alternative is about 3 miles from the Grant-Kohrs Ranch and about 5 miles from the Montana Territorial and State Prison as well as two other sites in Deer Lodge. The National Park Service (NPS) has expressed concern that the transmission line would intrude into the view from the Grant-Kohrs Ranch National Historic Site. The impacts would be primarily visual, indirect, and long-term. The same consultation and survey procedures mentioned for the Designated Corridor would be followed for this corridor.

Esthetic Impacts

Visual impacts would be as described for the Designated Corridor. The seven-mile area from Thunderbolt to Cottonwood Creek would sustain direct, high, long-term impacts to visual resources as the vegetation

changed from forest to shrub or grass. The change in vegetation would be visible for long distances. Changes in land form and vegetation would reduce long-term visual contrasts toward the valley floor. Viewer sensitivity would remain high except where the line would be located on the benches on the west side of the valley.

Alternative A would also be visible from Deer Lodge and the Wildflower Hills subdivision on Beck Hill, especially for those homes facing toward the south (the transmission line corridor). The transmission lines would be 3-5 miles from Deer Lodge and 1-1/2 miles or further from the subdivision.

The use of non-specular conductor and darkened towers would reduce any glare that would result from such a line. Where possible, portions of the line could be placed either behind a ridge line and out of view, or backdropped against the mountains further to the west, but the line would still be visible.

The corridor would also create high, long-term conflicts with the visual quality objectives of the Continental Divide National Scenic Trail, and would have additional visual consequences at the crossing of Interstate 90 and for the view from the Grant-Kohrs National Historic Site (see Cultural Resources) and the north end of the Spring Emery road.

Recreation

The forested area from Finn Gulch to near Emery Mine would sustain moderate recreation impacts, primarily due to the visual and recreational qualities of the area. The Continental Divide National Scenic Trail and the scenic route along I-90 would be crossed by this corridor, and it would be in the viewshed of the Spring Emery road. Impacts would be high, long-term, and direct.

Land Use

Agriculture

About 4.7 miles of irrigated land in Mullan Gulch, in the Deer Lodge Valley near the Clark Fork River, and at Gold Creek would be crossed. There is no centerline location in this corridor which would avoid converting farmland to use for the transmission line. Direct impacts to irrigated land are high. Direct short-term impacts include crop loss from road construction and consequent soil compaction. Direct, long-term impacts include loss of crop land occupied by structures or roads and operational problems with irrigation systems or field equipment.

Rangeland

The 5.5 miles of sub-alpine area along the Continental Divide would sustain direct, high, long-term impacts where soil disturbance occurs because of its shallow soils and limited growing season.

For the remainder of the corridor, the ability of the rangeland to recover depends upon whether there is surface disturbance, such as trampling or driving, or whether there is actual soil disturbance such as road building. Limited surface disturbance would not severely damage the range and it would recover rapidly. Impacts to those areas would be low and short-term.

Residential

This corridor would include residences and farmsteads in the area of Interstate 90 and Mullan Gulch. No buildings would be directly affected if a transmission line were built in this corridor. Impacts would be low, indirect, and long-term. The main impact would be the visual intrusion of the powerline.

Commercial Forest Land

About 17.1 miles of lodgepole pine/Douglas-fir commercial forest land would be crossed by this alternative. These forests are of moderate productivity, and the impacts resulting from right-of-way clearing and maintenance would be moderate, direct, and long-term.

Designated Management Areas

The corridor would cross about 3.6 miles of key winter range for elk and mule deer (see Animals).

THUNDERBOLT MOUNTAIN +AA ALTERNATIVE

Geology and Soils

This alternative would cross an area of slight to moderate landslide hazard as it joins the Designated Corridor at Gold Creek. Other impacts would be the same as for the Thunderbolt Mountain +A Alternative.

About 9.3 miles of this alternative lie above 6500 feet in elevation.

Water Resources

Impacts of the Thunderbolt Mountain +AA Alternative are generally the same as those for Thunderbolt Mountain +A Alternative.

Floodplains of both the Clark Fork and Little Blackfoot Rivers would have to be crossed, but their floodplains are narrow enough that they could both possibly be spanned. If not, disturbance of soil and vegetation would be minimal. Towers would be built on concrete footings designed to withstand flooding. Construction activities and the physical presence of the transmission line will not alter floodplain characteristics or create the potential for greater loss of property or life during flooding.

Threatened and Endangered Species

There are no major differences in impacts between those of this corridor and those of the Designated Corridor.

Cultural Resources

Impacts would be similar to those in the Designated Corridor, as would the intensive surveys and consultation procedures. A transmission line within this corridor could possibly be seen from several historic sites including the Gold Creek Historic District, Pioneer, Mullan Road, Grant Cabin Site, and the previously mentioned sites of Emery Mine, Hidden Hand Mine, the Grant-Kohrs Ranch, and other sites in Deer Lodge. Consequent impacts would be moderate.

Esthetic Impacts

There would be no major change in visual consequences as discussed for the Thunderbolt +A Alternative, other than where Interstate 90 is crossed.

This corridor would be in the viewshed of the Spring Emery Road from near the Emery Mine and would cross the Continental Divide National Scenic Trail.

Alternative AA would be visible from the Wildflower Hills subdivision on Beck Hill and Deer Lodge, as the corridor passes just to the east of the subdivision. Deer Lodge would have a view of the transmission line at a distance of 5 to 7 miles or farther away.

The corridor crossing at Interstate 90 is in a short tangent with curves at both ends and ridges on both sides of the freeway. Both the short tangent and the ridges would minimize the time the transmission line would be visible to motorists traveling the freeway. The corridor crosses Interstate 90 at nearly right angles, which would also lessen the visual impact. Impacts would be moderate to low, direct, and long-term in this area.

The use of non-specular conductor and darkened towers would reduce any glare that would result from such a line. Where possible, portions of the line could be placed either behind a ridge line and out of view, or backdropped against the mountains further to the east, but it would still be visible. Impacts would be direct and long-term.

Recreation

High, direct, long-term recreation impacts would occur from near the Little Black Foot River to the Designated Corridor. These impacts are primarily visual (see Esthetics) and cultural (see Cultural Resources). The Continental Divide National Scenic Trail would also be crossed. Impacts to the trail would be high, long-term, and indirect. No specific route has been designated for the trail.

Land Use

Agriculture

About 3.5 miles of irrigated land would be crossed by this alternative. The farmland is located in three main areas--along the Little Blackfoot River, near O'Neill Creek, and at the Clark Fork River. Centerline location adjustments in this corridor could enable the line to avoid some of this agricultural land, but there is no centerline location which would avoid all farmlands. Impacts to irrigated lands would be high, direct, and long-term.

Rangeland

Impacts are the same as those for Thunderbolt Mountain +A Alternative.

Residential

This corridor would pass just east of Beck Hill (see Esthetics). This corridor would also pass near at least two farmsteads in the Warm Springs Creek area. No buildings would be directly affected if a transmission line were built in this corridor. Impacts would be primarily visual, indirect, and long-term.

Commercial Forest Land

Impacts would be the same as those discussed for Thunderbolt Mountain +A Alternative. This route would cross about 12.8 miles of commercial forestland, resulting in moderate, long-term, direct impacts.

THUNDERBOLT MOUNTAIN +AAA ALTERNATIVE

Impacts for the area from Finn Gulch to the angle point near Fred Burr Creek were covered in the discussion of the Thunderbolt Mountain +A Alternative, and are shown in the respective impact maps and tables for the various resources. Those discussions will not be repeated here. This section will address only those additional impacts attributable to the AAA segment from Fred Burr Creek to Gold Creek. Impacts to Plants and Animals, Threatened and Endangered Species, Recreation, Rangeland, Forestland, and Designated Management Areas are the same as those for Thunderbolt Mountain +A Alternative.

Water Resources

Alternative AAA would cross the Clark Fork floodplain. It is likely that this floodplain could be spanned with 200-foot tall towers. If not, disturbance of soil and vegetation would be minimal. Towers would be built on concrete footings designed to withstand flooding. Construction activities and the physical presence of the transmission line will not alter floodplain characteristics or create the potential for greater loss of property or life during flooding.

Geology and Soils

The Gold Creek area is located in a slight to moderate landslide hazard zone. Steep slopes requiring earthmoving activity during construction would be susceptible to increased mass movement. Some of these areas could be avoided during centerline location.

About 9.3 miles of this route lie above 6500 feet in elevation.

Cultural Resources

Impacts would be the same as those discussed for the Thunderbolt +AA Alternative, except that the Mullan Road could be avoided.

Esthetic Impacts

The transmission line would be visible from Deer Lodge, 6-8 miles distant, and would be in the viewsheds of the Spring Emery Road and Continental Divide National Scenic Trail.

Alternative AAA would be visible from the Wildflower Hills subdivision on Beck Hill, both to the east and to the west. Several homes do face toward the west, and would have a view of the transmission line at a distance of 2-1/2 miles or further away.

The use of non-specular conductor and darkened towers would reduce any glare resulting from such a line. Where possible, portions of the line could be placed either behind the ridge line and out of view, or backdropped against the mountains further to the east or west, but the line would still be visible. Impacts would be direct, long-term, and moderate to low.

Land Use

Agriculture

About 4.6 miles of irrigated land would be affected by this corridor (see Table 6). The bulk of the irrigated land is along the Clark Fork River, O'Neill and Willow Creeks, with the remainder at Gold Creek. There is no centerline location within this corridor which would avoid converting farmlands to other uses. Impacts on irrigated land would be high, direct, and long-term.

Residential

No residences would be directly affected. This corridor would have indirect visual effects on residences southeast of Garrison and north of the Beck Hill subdivision. It would also be visible at a distance of several miles from Deer Lodge. No buildings would be directly affected if a transmission line were built in this corridor.

Commercial Forestland

About 14.7 miles of lodgepole pine/Douglas fir forests, rated medium in productivity, would be crossed by this alternative. Impacts would be long-term, direct, and moderate.

BLACK MOUNTAIN +A ALTERNATIVE

Impacts for the area on Alternative A from the angle point at Fred Burr Creek to the Gold Creek Substation site and along the Designated Corridor from Finn Gulch to the head of Peterson Creek were described in those respective consequences discussions and will not be repeated for this alternative. Discussions for the Black Mountain +A Alternative will pertain to the segment from the Designated Corridor past Black Mountain to Emery Mine.

Geology and Soils

Landslide hazard would be slight. About 6.2 miles of this alternative lie above 6500 feet in elevation.

Sandy soils cover deeply weathered granitic bedrock between Rock Creek and Spring Creek, west of the Divide. When exposed by road construction, this bedrock would break down into a loose, infertile sand which would make erosion control difficult. Impacts for that area are high, direct, and long-term.

This and similar areas will require extra precautions such as road grades under 8%, extra drainage structures, and road surfacing. Other precautions will include seeding and mulching exposed soil, use restrictions during wet soil conditions, topsoil replacement, and 200-foot-wide buffer strips along all identifiable stream channels. These mitigation measures will reduce impacts.

Water Resources

The soil problems between Rock Creek and Spring Creek would contribute to high impacts to water resources. Compacted soils are susceptible to severe erosion, and the sediment pollution potential of nearby streams would increase. Impacts on water resources would be short-term if proper soil stabilization is accomplished.

Plants and Animals

Plants

About 21 miles of this alternative crosses forestland. Impacts to the forest community would be high, direct, and long-term (during the life of the project), because the area would be converted from a forest community to a shrub and/or grassland community. Shrub or grassland which is crossed would sustain moderate or low, direct, and short-term impacts.

Animals

The key elk and mule deer winter range and calving grounds along the Boulder River and across the Divide at Peterson Creek would sustain high impacts from the removal of thermal cover, hiding cover, and forage during construction. Impacts would be the same as those discussed for the Designated Corridor: long-term and direct on thermal and hiding cover, short-term and direct on forage.

Threatened and Endangered Species

Consequences of the Black Mountain +A Alternative are basically the same as those discussed for the Designated Corridor.

Cultural Resources

The impacts to cultural resources would be basically the same as those for the Thunderbolt +AA Alternative, except that this corridor would be more visible from some areas in the Deer Lodge Valley.

Esthetic Impacts

Direct visual impacts of this corridor would be high in the mountainous areas along the Continental Divide. This is a densely forested area, with areas of light colored soils. The soil and vegetation contrasts, once a right-of-way was cleared and roads built, would be visible for long distances. The viewing distances would be foreground (0-1/2 mile) and middle ground (1/2 to 5 miles), with much of the area visible from the Deer Lodge Valley, Interstate 90, and the Spring Emery road. Impacts would last for the life of the project.

The Continental Divide National Scenic Trail would be crossed and impacts would be high, long-term, and direct. The Spring Emery road, in the process of being submitted to the National Recreational Trails System, would be crossed six times, though not at or near vistas. Impacts would be long-term, high, and direct. The Black Mountain +A Alternative would cross Interstate 90 in the north end of the Deer Lodge Valley. The transmission line would be visible to motorists using the freeway, but would be backdropped by surrounding hills. The impact would be high, direct, and long-term. Visual impacts to Beck Hill and Deer Lodge would be as discussed previously.

Recreation

The primary factors of recreation concern are the Continental Divide National Scenic Trail, discussed for the Designated Corridor, and the Spring Emery road east of Deer Lodge. The Spring Emery road has been marked as a scenic loop starting and ending at Deer Lodge and is in the process of being submitted to the National Recreational Trails System. The corridor would cross the road six times. Careful location of a centerline could avoid crossing the road at or near vistas. Impact would be high, direct, and long-term in this area.

Land Use

Agriculture

Impacts would be the same as those described for Thunderbolt Mountain +A Alternative. No centerline within this corridor would avoid converting farmland to use for the transmission line.

Rangeland

Impacts would be the same as those described for the Designated Corridor.

Commercial Forest Land

Impacts would be the same as those described for the designated corridor. About 21 miles of commercial forestland would be crossed, resulting in moderate, long-term, direct impacts.

Designated Management Areas

Impacts would be the same as those for Thunderbolt Mountain +A Alternative.

BLACK MOUNTAIN +AA ALTERNATIVE

The Black Mountain portion of this corridor was discussed in the previous alternative discussion, and the AA portion was discussed in the Thunderbolt +AA Alternative. To avoid repetition, those consequences discussions will not be repeated. Please refer back to the those portions of the document and to the various impact maps for the impacts occurring in this alternative.

BLACK MOUNTAIN +AAA ALTERNATIVE

Both portions of this corridor have been described in prior sections of this document. The Black Mountain +A Alternative discussed major impacts attributable to the Black Mountain corridor, and the Thunderbolt +AAA Alternative discussed the high impacts of the AAA corridor. Please refer back to those two sections and to the various impact maps for the environmental impacts of the Black Mountain +AAA Alternative.

ALTERNATIVE B

Alternative B and the Designated Corridor are the same from Alta Gulch to a point west of the Continental Divide, and again on the west side of the

Deer Lodge Valley to Gold Creek. In each area, the environmental consequences are the same for both corridors. Only in the crossing of the Deer Lodge Valley do the corridors diverge.

In crossing the Deer Lodge Valley, the environmental consequences associated with Alternative B and the Designated Corridor would generally be similar, but there would be some differences. Those differences are discussed below. Impacts to Geology and Soils, Plants and Animals, Threatened and Endangered Species, Cultural Resources, Recreation, Rangeland, Residential, and Designated Management Areas would be the same as those for the Designated Corridor.

Water Resources

There is a wetland where this corridor crosses the Clark Fork River. Centerline location within the corridor could avoid the wetland, or it could be spanned. Alternative B would also cross the Clark Fork floodplain where the width (about 2400 feet) makes it unlikely that this floodplain could be spanned. However, disturbance of soil and vegetation would be minimal. Towers would be built on concrete footings designed to withstand flooding. Construction activities and the physical presence of the transmission line will not alter floodplain characteristics or create the potential for greater loss of property or life during flooding.

Esthetic Impacts

On the east side of the Deer Lodge Valley, Alternative B straddles a main route of travel from Deer Lodge to the Deer Lodge National Forest. Much of the corridor would be located along a ridge parallel to the road. In the valley east of the road, there are several farmsteads. Unless a transmission line were located in the valley, much of the line in that area would be skylined to the occupants of those farmsteads. The corridor would cross the widest part of the valley. Impacts would be moderate to low due to the vegetation and landforms visually absorbing much of the contrast caused by the line. Viewer sensitivity would be high. Impacts would be direct and long-term.

Land Use - Agriculture, Commercial Forest Land

Alternative B would cross 4.2 miles of irrigated land, and .6 mile of non-irrigated land. No centerline location within this corridor would avoid converting farmland to use for the transmission line. Direct, long-term impacts would be high for irrigated land and moderate for the

non-irrigated land. Direct impacts would be moderate for the 14.7 miles of commercial forestland crossed and would continue for the life of the project.

ALTERNATIVE C

Alternative C and the Designated Corridor are the same from Alta Gulch to west of the Continental Divide; the related environmental consequences described for the Designated Corridor would also apply to Alternative C.

On the west side of the Deer Lodge Valley, Alternative C and the Designated Corridor are the same, and would have the same environmental consequences.

Only in crossing Deer Lodge Valley do the corridors diverge. Though the environmental consequences in Deer Lodge Valley are very similar, some differences do exist. These differing consequences are discussed below. Impacts to Plants and Animals, Threatened and Endangered Species, Cultural Resources, Recreation, Rangeland, Residential, and Designated Management Areas would be the same as those for the Designated Corridor.

Geology and Soils

About 4.5 miles of this alternative lies above 6500 feet in elevation, where icing would be a problem during the winter months. Stronger towers and shorter spans would be required.

Water Resources

Alternative C would cross the Clark Fork floodplain where floodplain width makes it likely that this floodplain could be spanned.

Esthetic Impacts

Alternative C would cross the widest part of the Deer Lodge Valley. Any transmission line placed within the corridor would be obvious from Interstate 90. The corridor tends to be aligned contrary to the topography. Impacts would be low or moderate, long-term, and direct.

Land Use - Agriculture, Commercial Forest Land

No centerline location in this corridor would avoid converting farmlands to use for the transmission line. Alternative C would cross 5.5 miles of

irrigated land and 1.2 miles of non-irrigated lands. Direct, long-term impacts to irrigated land would be high; those to non-irrigated land would be moderate. During the life of the transmission line, moderate, direct impacts would be sustained by the 15.1 miles of commercial forest land crossed.

ALTERNATIVE D

Alternative D and the Designated Corridor are identical from Alta Gulch to the vicinity of Rock Creek. The environmental consequences in that area would also be identical. The corridors are different from Rock Creek to Substation Site 1, and those environmental impacts are discussed below.

Geology and Soils

A moderate to severe landslide hazard exists in the vicinity of the Continental Divide. The consequences described for the Designated Corridor would also be applicable to Alternative D, even though it has a different location. About 4.6 miles of this route lie above 6500 feet in elevation, and the potential for icing would require stronger towers and shorter spans.

From the Continental Divide west to the Deer Lodge Valley floor, the soils are primarily granitic in origin. The decomposition of granite forms small sand-like particles easily moved by surface water from steep slopes and deposited along the east side of Deer Lodge Valley. The names of Sand Hollow Creek and Sand Creek are indicative of the amount of material being redeposited near the valley floor. The steeper slopes near the Continental Divide would require more earthmoving activity during construction, increasing the amount of potential soil erosion.

Impacts from the transmission line in the granitic soils would be high, direct, and long-term. Special mitigation measures mentioned for the Designated Corridor would also be applicable here, and would confine the causes of damage to the short-term, while long-term effects of soil loss, soil compaction, and time to rebuild or reform the topsoil and other soil layers would remain.

Water Resources

Accelerated soil erosion during construction in the Continental Divide area would result in greater sediment loads in streams and drainages. Impacts would be high. Recommended mitigation measures would limit

sediment and turbidity increases to the short term. Increased water yield, dissolved solids, and water temperature would be low but long-term impacts.

Alternative D would cross the Clark Fork floodplain where floodplain width makes it unlikely that this floodplain could be spanned. However, disturbance of soil and vegetation would be minimal. Towers would be built on concrete footings designed to withstand flooding. Construction activities and the physical presence of the transmission line will not alter floodplain characteristics or create the potential for greater loss of property or life during flooding.

One wetland area was identified along the corridor. But because of its small size, this wetland could be spanned. Therefore, no action would take place in a wetland or would foster the development of a wetland.

Plants and Animals

Plants

The highest, direct, long-term consequences for plants would be for forests from the west slopes of the Continental Divide eastward to Alta Gulch. Here, construction of a transmission line would require changing the forest community to that of a shrub or grassland community. High consequences would also occur on south and south-facing slopes where revegetation would be difficult. Impacts to grassland or shrub communities would be short-term, unless revegetation were not successful.

Animals

The environmental consequences to elk and deer in the Alta Gulch, Finn Gulch, and Berkin Flat areas would be the same as those described for the Designated Corridor.

Along the Continental Divide, there is additional elk and deer winter range. On the west side of Deer Lodge Valley, the environmental consequences to elk and deer would be greater than those described for the Designated Corridor, because Alternative D crosses additional areas of south and southeast-facing slopes within key elk and deer winter range. Impacts in these non-forested areas would be low to moderate, direct, and short-term.

East of Warm Springs is some important year-round waterfowl habitat. The corridor would cross this area perpendicular to the flight path from resting and nesting areas to feeding areas further north in the Valley. The State Department of Fish, Wildlife, and Parks have stated that a

corridor in this location would have serious direct, long-term consequences to waterfowl and that such consequences would not be mitigable.

Threatened and Endangered Species

The discussion for the Designated Corridor pertaining to bald eagles would also be applicable to that portion of Alternative D along the Boulder River.

The area along the Continental Divide has been developed with mining, roads, and logging. No additional adverse impacts to grizzly bears would occur because of a transmission line. No critical habitat would be modified.

Cultural Resources

The discussion for the Designated Corridor would also be applicable for Alternative D. Most known sites would be in Anaconda or Deer Lodge. The same survey and consultation procedures would be used for this alternative as for the Designated Corridor.

Esthetic Impacts

Along the Boulder River and in the Continental Divide Area, the visual consequences for Alternative D would be similar to those described for the Designated Corridor. The visual impact to the Continental Divide National Scenic Trail would be high, direct, and long-term. The skew of the corridor as it crosses the Divide would increase the length of line visible to users of the trail.

Visual consequences would also be serious where Alternative D crosses Interstate 90 passing north of Warm Springs. Although viewer sensitivity would be high, vegetation and land forms would make the visual contrast rating moderate to low. Along the east side of the valley, the corridor is aligned contrary to the topography, and would cause the transmission line to be more visible from Interstate 90. The transmission line would be visible for several miles on the east side of the valley because of the long, continuous, west-facing mountain slopes. Visual impacts would be direct and long-term.

Recreation

The amount of existing development, such as road and trails, along the corridor would lessen the environmental consequences of the transmission line for developed recreation. Impacts would be moderate to low except at the crossing of the Continental Divide National Scenic Trail and the Warm Springs Game Refuge. Impacts to recreation there would be direct, high, and long-term.

Land Use

Agriculture

Consequences to agricultural land would be as discussed for the Designated Corridor. Alternative D would cross 5.4 miles of irrigated land. No centerline location within this corridor would avoid converting farmlands to use for the transmission line. Direct, high, long-term impacts would result.

Rangeland

Environmental consequences would be low except in the Finn Gulch area (see Rangeland discussion for Designated Corridor, Deer Lodge Area), where high, direct, long-term impacts could result.

Residential

This corridor would cross the populated Deer Lodge Valley about one mile north of Warm Springs. No buildings would be directly affected by a transmission line located within this corridor. Moderate to low, long-term, indirect visual impacts would result.

Commercial Forest Land

Moderate environmental consequences would occur from the Continental Divide eastward to Berkin Flat, due to the moderate productivity potential of about 17 miles of commercial forestland being crossed. During the life of the transmission line, commercial timber could not be grown under or adjacent to it. Direct, long-term impacts would result.

Designated Management Areas

A portion of the Warm Springs Game Farm could be crossed by the corridor, as would the existing water bodies east of Warm Springs. Warm springs in the area make the waters year-round habitat for waterfowl. Centerline location within Alternative D could avoid most impacts. However, the Montana Department of Fish, Wildlife, and Parks has stated that the

impacts of a transmission line on waterfowl flying back and forth between feeding grounds in the upper valley and the refuge cannot be mitigated. Their experience with a similar situation near Broadview, Montana, shows a high incidence of waterfowl collisions with that particular transmission line. This conflict would require that the corridor be relocated. Otherwise direct, long-term impacts would result.

ALTERNATIVE E

Geology and Soils

Steep slopes in the Brown's Gulch area would require more earthmoving activity during construction, increasing the risk of slope failures, potential damming and siltation of streams, landscape scars, and soil loss. Accelerated erosion from sandy soils could occur in the area of Lowland Campground, in addition to the area west of Brown's Gulch.

Impacts would be moderate to high, direct, and short-term.

These areas will require gentle road grades and extra precautions for road surfacing, and extra drainage structure. In addition, seeding and mulching of exposed soil, use restrictions during wet soil conditions, 200-foot wide buffer strips along all identifiable stream channels, topsoil replacement, and detailed geologic investigations and precautions to prevent slope failures would be required.

About 7.8 miles of this alternative would lie above 6500 feet in elevation, where the potential for icing may require stronger towers and shorter spans.

Water Resources

Due to severe erosion hazards, greater sediment loads in surface drainages would occur in the vicinities of Lowland Campground and Brown's Gulch westward. Impacts would be moderate to high and would be confined to the short term with the application of recommended mitigating measures. Some small increases in water yield, temperature, and dissolved solids would persist over the long term, but would not have significant adverse effects.

Alternative E would cross the floodplains of several creeks whose most likely spanning their relatively narrow floodplains.

A wetland area along Silver Bow Creek was identified along Alternative E. This wetland could be spanned. Therefore, no action would take place in a wetland or would foster the development of a wetland.

Plants and Animals

Plants

The forest community from Alta Gulch westward to Brown's Gulch would sustain moderate, direct impacts from the removal of trees and from the long-term change from a forest community to a shrub or grassland community. The steep south-facing slopes near Brown's Gulch would increase the difficulty of revegetating that area. Impacts on grass and shrub communities would be low to moderate, direct, and short-term.

Animals

Environmental consequences for Alternative E in the Berkin Flat area would be as described for the Designated Corridor. The key elk and deer winter range also extends south of Berkin Flat along Lowland Creek with impacts similar to those in Berkin Flat. Impacts on thermal and hiding cover will be direct and long-term. Impacts on forage would be direct and short-term, and on animal population indirect and undefined (see Mitigation, Chapter 2).

On the west side of Deer Lodge Valley, the environmental consequences would be similar to those described for Alternative D.

Threatened and Endangered Species

Environmental consequences for Alternative E would be similar to those described for the Designated Corridor. However, no grizzly bear activity has been reported in areas crossed by this corridor.

Cultural Resources

Environmental consequences would generally be as described for the Designated Corridor. Two sites at Anaconda, the Hearst Free Library and Marcus (Daly) Hotel, may sustain direct, moderate, long-term visual impacts.

Esthetic Impacts

Visual consequences from near Lowland Campground to Berkin Flat would be high because the line would create high contrasts with land forms and vegetation. High contrasts caused by the transmission line will not be offset by the middle-ground viewing distances (up to 5 miles away) because of a high level of viewer sensitivity.

Visual consequences would be moderate to low where the corridor crosses Deer Lodge Valley. Even though viewer sensitivity would be increased to high, the line would not contrast as greatly with land forms and vegetation.

Impacts would be direct and long-term. The angle of the line with existing roads and residences would increase the amount of reflected sunlight seen during certain times of the day and year. The use of non-specular conductor and darkened towers would lessen some of this impact.

Recreation

Consequences to recreation would be moderate to low and similar to that described for other corridors.

Land Use

Agriculture

The environmental consequences to irrigated lands would be like those described for the Designated Corridor.

Alternative E crosses 4.5 miles of irrigated land. Direct, high, long-term impacts would result. No centerline location within this corridor would avoid converting farmland to use for the transmission line corridor.

Rangeland

Impacts would be as described for the Designated Corridor.

Residential

This corridor would pass within one mile of Opportunity and within two miles of Anaconda. No buildings would be directly affected, but the visual intrusion of the transmission line could cause indirect long-term impacts.

Commercial Forest Land

About 23.9 miles of commercial forest are crossed. Direct, moderate, long-term impacts would result.

ALTERNATIVE F

Alternative F and Alternative E are identical from Berkin Flat to the vicinity of Lowland Campground; the environmental consequences of those sections are also identical.

On the west side of Deer Lodge Valley, much of Alternative F is the same as Alternatives B, C, D, and E, and the Designated Corridor. The environmental consequences described for the areas common with those alternatives would apply equally to Alternative F.

From the vicinity of Lowland Campground to near Anaconda, Alternate F diverges from the other corridor alignments. The environmental consequences from Lowland Campground to Anaconda are described below.

Geology and Soils

Impacts would be moderate to low, except in one area of Brown's Gulch where high impacts could occur. Impacts would be long-term and direct.

About 8.4 miles of this alternative are above 6500 feet in elevation, requiring stronger towers and shorter spans to compensate for icing problems.

Water Resources

Direct, short-term impacts from erosion and turbidity would be low between Brown's Gulch and Anaconda, high in one small area of Brown's Gulch, and moderate from the Continental Divide down Hail Columbia Gulch. Proper mitigation measures should prevent any significant long-term impacts.

Alternative F would cross the Silver Bow Creek floodplain. Floodplain width makes it likely that this floodplain could be spanned.

One small wetland area was identified along the corridor. Because of its small size, however, this wetland could be spanned or avoided during centerline location. Therefore, no action would take place in a wetland or would foster the development of a wetland.

Plants and Animals

Plants

Direct, long-term impacts would be high in the forested area from Lowland Campground south to Brown's Gulch. Tree cover would be removed from

beneath the transmission line and the vegetation cover would be changed to shrub or grassland. Steep slopes, south-facing slopes, and low precipitation would combine to make revegetation slow. Shrub and grass communities would sustain only short-term impacts.

Animals

In addition to the impacts described for Alternative E, about 8 miles of elk and deer winter range would be crossed between Lowland Campground and Opportunity. Impacts are direct, and moderate to low as this is general habitat only, not critical wintering areas. Forested areas providing thermal or hiding cover would sustain direct, long-term impacts, whereas nonforested areas would sustain only short-term impacts.

Threatened and Endangered Species

There are no threatened or endangered species known to occur in this corridor.

Cultural Resources

As described for Alternative E, there are two National Register historic sites in Anaconda. Environmental impacts would be as described for the Designated Corridor and Alternative E.

Esthetic Impacts

Because of steep slopes, soil types, vegetation contrasts and nearness to viewers, Alternative F would cause high visual impacts from Lowland Campground to Brown's Gulch. Hail Columbia Gulch is not wide enough to enable a line to be located away from roads and farmsteads. A transmission line located off the valley bottom would require putting towers on steep slopes, fully visible from roads and farmsteads at distances less than one-half mile.

Long distances of a transmission line in this corridor could be viewed from Anaconda and from Interstate 90. Any transmission lines in the corridor could also reflect sunlight during certain times of the day or year, accentuating the presence of the line and the towers. Even though the landscape and vegetation may visually absorb a transmission line, nearness to a potentially large number of viewers at Anaconda and on Interstate 90 would create long-term, direct, moderate visual impacts over much of the remainder of the corridor. The use of non-specular conductor and darkened towers would mitigate some of the impacts caused by reflected sunlight.

Recreation

Environmental consequences of Alternative F to recreation would be moderate to low, as described for the other corridors.

Land Use

Agriculture

Some irrigated land would be crossed in Hail Columbia Gulch, Brown's Gulch, and north of Ramsey. The corridor crosses a total of 6.0 miles of irrigated land, which would be directly affected by long-term high impacts, and 1.6 miles of non-irrigated land, which would sustain moderate, direct, long-term impacts. There is no centerline location within this corridor that would avoid converting farmland to use for the transmission line corridor.

Rangeland

The degree of impact to the rangeland in this corridor depends upon the type of disturbance. Surface disturbance such as trampling or limited driving will not severely damage the range, and it will recover rapidly. Impacts for these areas would be low, direct, and short-term. Where there is soil disturbance such as excavation, recovery will be slow because of shallow soils and the short growing season. Impacts would be high, direct, and long-term in these areas.

Residential

Alternative F would pass within one mile of Crackerville and Opportunity, and within two miles of Anaconda. No buildings would be directly affected. Impacts would be primarily indirect, long-term, and visual. Impacts are rated moderate to high for much of the corridor because of greater population density.

Forest Land

The 21.4 miles of commercial forest land crossed by Alternative F would sustain moderate, direct, long-term impacts.

COMPARISON OF THE ALTERNATIVES

Method

Environmental impacts for the Designated Corridor and alternatives in the Deer Lodge Valley area are based on the same numerical analysis

methodology as that used in the TER and EIS (see Appendix F, Methodology) so a direct comparison to those documents can be made. Higher scores indicate higher impacts. Deer Lodge area corridors may be compared by length, environmental resource area, total impact score, and per-mile impacts (Table 7). The per-mile impact score is calculated by dividing the total impact score of each corridor by its length.

Findings

The information summarized in Tables 7 through 9 is briefly discussed below.

In Table 8, the 9 major Environmental Criteria (listed on page 1-12) are summarized. In Table 9, the 5 items listed as Project Development and Jurisdictional Criteria (pages 1-12 and 1-13) are summarized. The Environmental Criteria were developed from public and agency comments early in the process. Project Development and Jurisdictional Criteria were developed from public and agency comments as additional items to consider when reaching a decision.

Compared to the 11 other Deer Lodge alternatives (see Table 7), the Designated Corridor has the lowest visual and prehistoric/historic impact (tied with C) ranking. It ranks second lowest in commercial forest and rangeland impacts. The rest of the Designated Corridor impacts fall generally in the middle range of the rankings. It has the least total impacts overall and ranks second lowest in per-mile impacts.

The Thunderbolt Mountain +A Alternative has the second lowest impacts in three resource areas: land suitability, surface water, and recreation. Its total impact score ranks fifth lowest; per-mile impacts are sixth lowest.

The Thunderbolt Mountain +AA Alternative has the lowest impact score of all alternative corridors in seven areas: length, fish and wildlife habitat, vegetative cover, commercial forest land, population, and surface water, impacts. The rest of the impacts range from the second lowest (agriculture) to the middle of the rankings. Total impact score ranks this alternative as third lowest. Per-mile impacts are fifth highest.

The Thunderbolt Mountain +AAA Alternative has the lowest impacts of all the alternatives in land suitability as well as in length and surface water impacts (same as Thunderbolt Mountain +AA Alternative). It is second lowest in fish and wildlife and vegetative cover. The remainder of the impact areas generally rank near the middle. Total impacts rank fourth lowest; per-mile is third highest.

Table 7. Comparison of Deer Lodge Area Alternatives

Resource Area	Designated	Thunder- bolt +A	Thunder- bolt +AA	Thunder- bolt +AAA	Black Mtn. +A	Black Mtn. +AA	Black Mtn. +AAA	B	C	D	E	F
Length (Miles)	37.8	37.7	35.8	35.8	41.7	39.8	39.8	37.7	37.7	48.1	58.2	63.4
Fish & Wildlife	133	125	110	112	143	128	130	136	135	168	165	173
Land Suitability	120	110	113	106	123	126	119	123	116	159	198	213
Surface Water	58	52	50	50	59	57	57	61	60	76	95	90
Vegetative Cover	194	210	188	193	241	219	224	202	198	254	322	333
Unique Natural Resources	0	0	0	0	0	0	0	5	0	14	7	1
Agriculture	42	38	28	37	38	8	37	36	49	43	36	54
Commercial Forestland	82	103	77	88	126	100	111	88	91	102	143	128
Range	46	54	52	52	50	48	48	46	45	53	58	63
Recreation	126	113	170	167	129	186	183	112	116	197	227	225
Designated Management Areas	0	0	0	0	0	0	0	0	0	C	0	0
Prehistoric/historic	88	108	108	102	98	98	92	90	88	101	123	149
Human Population	107	107	97	107	115	105	115	198	102	121	177	198
Visual Resources	274	303	292	286	351	340	334	284	276	357	472	476
Total Impacts	1270	1323	1285	1300	1473	1435	1450	1381	1276	1645	2023	2103
Per Mile Impacts	33.6	35.1	35.9	36.3	35.3	36.1	36.4	36.6	33.8	34.2	34.8	33.2
Irrigated Farmland (Mi.)	4.4	4.7	3.5	4.6	4.7	3.5	4.6	4.2	5.5	5.4	4.5	6.0
Non-irrigated Farmland (Mi.)	1.8	0	0	0	0	0	0	.6	1.2	0	0	1.6

C - Serious conflict with Warm Springs Game Refuge - Cannot be mitigated.

* - Corridor relocation necessary.

TABLE 8 CORRIDOR EVALUATION SUMMARY DEER LODGE AREA CORRIDORS MAJOR ENVIRONMENTAL CONSIDERATIONS

CRITERIA	DESIGNATED	THUNDERBOLT - A	THUNDERBOLT - AA	THUNDERBOLT - AAA	BLACK MTN. - A	BLACK MTN. - AA	BLACK MTN. - AAA	B	C	D	E	F
1. ENVIRONMENTAL IMPACT FROM NUMERICAL ANALYSIS	Lowest 1270	1323	Low 1285	1300	1473	1435	1450	1381	Second Lowest 1276	1645	Second Highest 2023	Highest 2103
2. AGRICULTURAL IMPACT	Corridor 4.4 miles of irrigated 1.8 miles dryland Centerline 3.3 miles of irrigated 2.6 miles of dry land	Corridor 4.7 miles irrigated 0.0 miles of dryland Centerline 4.9 miles of irrigated	Lowest Corridor 3.5 miles of irrigated 0.0 miles of dryland Centerline 2.0 miles of irrigated .6 mile of dryland	Corridor 4.6 miles of irrigation 0.0 miles of dry land Centerline .8 miles of irrigation	Same as Thunderbolt - A	Same as Thunderbolt - AA	Same as Thunderbolt - AAA	Corridor 4.2 miles of irrigation 0.6 miles of dryland Centerline 4.2 miles of irrigation 1.7 miles of dryland	Corridor 5.5 miles of irrigation 1.2 miles of dryland Centerline 6.2 miles of irrigation 1.2 miles of dryland	Corridor 5.4 miles of irrigation 0.0 miles of dryland Centerline 5.4 miles of irrigation 0.0 miles of dryland	Corridor and Centerline Cross 4.5 miles of irrigated land and 0.0 miles of dryland	Highest Corridor 6.0 miles of irrigation 1.6 miles of dryland Centerline 5.3 miles of irrigation .6 miles of dryland
3. IMPACTS TO RESIDENCES AND INHABITED AREAS	Crosses valley 5 miles South of Deer Lodge in populated area	Second Highest Passes between Beck Hill and Deer Lodge	Lowest Passes behind Beck Hill and North and East of Garrison	Passes behind Beck Hill, from which portions of line may be visible, and south of Garrison	Second Highest Passes between Beck Hill and Deer Lodge	Passes behind Beck Hill and North and East of Garrison	Passes behind Beck Hill, from which portions of line may be visible, and South of Garrison	Highest Passes 4 miles south of Deer Lodge	Crosses valley 7 miles South of Deer Lodge in populated area	Passes within one mile of Warm Springs	High Passes within one mile of Opportunity and within two miles of Anaconda	Highest Passes within one mile of Crackerville and Dpportunity and within two miles of Anaconda
4. COMMERCIAL / FOREST LAND IMPACTS (Miles)	Second Lowest 13.7 miles	17.1 miles	Lowest 12.8 miles	14.7 miles	21.0 miles	16.7 miles	18.6 miles	14.7 miles	15.1 miles	17.0 miles	Highest 23.9 miles	Second Highest 21.4 miles
5. VISUAL IMPACTS Numerical analysis score	Cross widest part of Deer Lodge Valley Crosses I-90 274	Visible from Wildflower Hills Subdivision on Beck Hill Crosses I-90 303	Crosses East of Beck Hill and North and East of Garrison Crosses I-90 and U.S. 12 292	Visible from Wildflower Hills Subdivison Crosses I-90 286	Visible from Wildflower Hills Subdivision Crosses I-90 351	Crosses East of Beck Hill, North and East of Garrison Crosses I-90 and Highway 12 340	Visible from Wildflower Hills Subdivision Crosses I-90 334	Crosses widest part of Deer Lodge Valley about 4 miles South of Deer Lodge 284	Crosses widest part of Deer Lodge Valley about 7 miles South of Deer Lodge 276	Long stretches of line visible from I-90, goes North of Warm Springs 357	Second Highest Visibility Near Dpportunity and Anaconda 472	Highest Visibility for Greatest Length Near Opportunity and Anaconda 476
6. THREATENED AND ENDANGERED SPECIES	No Identified Impacts	No Identified Impacts	No Identified Impacts	No Identified Impacts	No Identified Impacts	No Identified Impacts	No Identified Impacts	No Identified Impacts	No Identified Impacts	No Identified Impacts	No Identified Impacts	No Identified Impacts
7. FISH AND WILDLIFE HABITAT IMPACTS Numerical analysis score	Crosses elk key range along Boulder River and head of Peterson Creek elk winter range on west side of Deer Lodge, near calving ground at Gold Creek 133	Low Crosses elk key range along Boulder River and Baggs Creek, elk winter range on West side of valley, near calving ground at Gold Creek 125	Lowest Crosses Boulder River and Baggs Creek elk range 110	Low Crosses Boulder River and Baggs Creek elk range 112	Crosses Boulder River Peterson Creek, Baggs Creek winter range on west side of valley, near calving ground at Gold Creek 143	Boulder River, Peterson Creek, Baggs Creek winter ranges crossed, near calving ground at Gold Creek 128	Boulder River Peterson Baggs Creek elk ranges crossed. near claving ground at Gold Creek 130	Same areas as designated corridor with as addition of wetland 136	Same areas as designated corridor 135	Second Highest Crosses several elk ranges, and Warm Springs game refuge where impacts of waterfowl cannot mitigated according to State FW&P 168	Third Highest Crosses Boulder River key range, and winter ranges on West side of valley one wetland area 165	Highest Crosses Boulder River elk key range, ranges on West side of valley, near calving ground at Gold Creek 173
8. IMPACT TO FEDERAL REGISTER AND HISTORIC/ ARCHEOLOGIC SITES	Lowest Near several sites in Berkin Flat area Would be visible from 5 National Register sites in Deer Lodge Near Pioneer as it crosses Gold Creek Historic District	Near several sites in Berkin Flat area Emery and Hidden Hand Mine, visible from sites in Deer Lodge including Grant-Kohrs NHS, near Pioneer in Gold Creek Historic District	Near several sites in Berkin Flat area, Near Emery, Hidden Hand Mine Near sites Near Garrison Crosses Mullan Road, Gold Creek Historic District	Near several sites in Berkin Flat area, Emery Hidden Hand Mine Near Pioneer, in Gold Creek Historic District	Same as Thunderbolt +A except more of line may be visible from Deer Lodge	Same as Thunderbolt +AA except more of line may be visible from Deer Lodge	Same as Thunderbolt +AAA except more of line may be visible from Deer Lodge	Second Lowest Near several sites around Berkin Flat near sites in Deer Lodge Near Pioneer in Gold Creek Historic District	Lowest Near several sites around Berkin Flat in valley south of Deer Lodge Near Pioneer as it crosses Gold Creek Historic District	Low Near several sites around Berkin Flat Near Pioneer Crosses Gold Creek Historic District	Near several sites around Berkin Flat Near Anaconda with 2 National Register sites Near Pioneer Crosses Gold Creek Historic District	Highest Near several sites around Berkin Flat Nearer to Butte, Silver Bow Creek areas, Anaconda, Pioneer Crosses Gold Creek Historic District
9. IMPACT TO SPECIAL MANAGEMENT AREAS AND UNIQUE RESOURCE IMPACT	Crosses 10 miles of Key Big Game Winter Range	One of three Lowest Crosses 3.5 miles of Key Big Game Winter Range	Dne of three Lowest Crosses 3.5 miles of Key Big Game Winter Range	Dne of three Lowest Crosses 3.5 miles of Key Big Game Winter Range	Crosses 6 miles of Key Big Game Winter Range	Crosses 6 miles of Key Big Game Winter Range	Crosses 6 miles of Key Big Game Winter Range	Crosses 10 miles of Key Big Game Winter Range	Crosses 10 miles of Key Big Game Winter Range	Highest Crosses Warm Springs Game Farm – Crosses 12 miles of Key Big Game Winter Range	Crosses 10 miles of Key Big Game Winter Range	Crosses 10 miles of Key Big Game Winter Range
All corridors cross Continental Divide National Scenic Trail (no specific location)												

TABLE 9 CORRIDOR EVALUATION SUMMARY DEER LODGE AREA CORRIDORS PROJECT
DEVELOPMENT AND JURISDICTIONAL CONSIDERATIONS

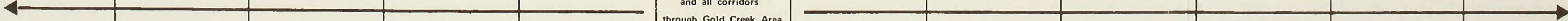
ITEM	DESIGNATED	THUNDERBOLT - A	THUNDERBOLT - AA	THUNDERBOLT - AAA	BLACK MTN. A	BLACK MTN. - AA	BLACK MTN. - AAA	B	C	D	E	F
1. CONSTRUCTION COSTS (Million dollars)	27.1 Second Lowest 37.8 miles	27.6 37.7 miles	25.8 35.8 miles	26.1 Lowest 35.8 miles	30.3 41.7 miles	28.5 39.8 miles	28.8 39.8 miles	28.3 37.7 miles	27.5 37.7 miles	35.5 48.1 miles	40.9 Second Highest 58.2 miles	44.9 Highest 63.4 miles
2. FEDERAL AND STATE LANDS CROSSED (Miles)	19.8	22.2	16.8	18.9	18.2	12.8 Least Distance	14.9 Second Least Distance	21.5	20.3	26.2	32.0 Longest Distance	27.0
3. PARALLELING OF EXISTING POWER LINES/UTILITY CORRIDORS (Miles)	15.6	8.8	1.0 Lowest Potential	3.2 Second Lowest Potential	8.8	1.0 Lowest Potential	3.2 Second Lowest Potential	15.6	15.4	25.4	29.8 Second Highest Potential	38.5 Highest Potential for Paralleling
4. ESTIMATED COSTS OF ELECTRICAL LOSSES (Million of dollars, for life of facility)	\$8.0	\$8.0	\$7.6 Lowest	\$7.6 Lowest	\$8.8	\$8.4	\$8.4	\$8.0 Second Lowest	\$8.0 Second Lowest	\$10.2	\$12.3 Second Highest	\$13.4 Highest
5. MAJOR AGENCY OR GROUP RECOMMENDA- TIONS	Deer Lodge Valley Resource Association (DLVRA) opposes this corridor	Dpposed by residents of Wild Flower Hills Subdivision on Beck Hill		Dpposed by residents of Wild Flower Hills Subdivision on Beck Hill	Dpposed by residents of Wild Flower Hills Subdivision on Beck Hill		Dpposed by residents of Wild Flower Hills Subdivision on Beck Hill	DLVRA opposes this corridor	DLVRA opposes this corridor	State Depart. of Fish, Wildlife and Parks opposes because of Impacts on Waterfowl in Warm Springs Area		DLVRA recommended similar corridor
						Residents oppose any and all corridors through Gold Creek Area						
	Continental Divide National Scenic Trail Society says designated route would not result in unacceptable impacts	NPS says corridor would have greatest visual impact on Grant-Kohrs National Historic site	EPA says this alternative is a good choice			1- NPS says corridor would have least visual impact on Grant-Kohrs National Historic Site 2- Appears to USFWS to be best route in Deer Lodge Valley Area						

TABLE 10 COMPARISON OF SUBSTATION SITES BY
EVALUATION CRITERIA

CRITERIA	SUBSTATION SITE 1 (DEMPSEY CREEK)	SUBSTATION SITE 2 (SPRING GULCH)	SUBSTATION SITE 3 (GOLD CREEK)	SUBSTATION SITE 3A (PIKES PEAK CREEK)
1. PROXIMITY TO LOAD CENTERS BUTTE, HELENA, MISSOULA	Approximately equal for all sites	Approximately equal for all sites	Approximately equal for all sites	Approximately equal for all sites
2. PROXIMITY TO EXISTING & FUTURE ELECTRICAL SYSTEMS	Lowest for future systems No interties needed	No interties needed	Need 6 mile intertie with MPC 230 kV line best for future system	Need 1.8 mile intertie with MPC 230 kV line Need 2.7 mile intertie with BPA 230 kV line
3. YEARLONG ROAD ACCESS	One mile of new road construction will be required	One mile new road construction will be required Some steep grades	Will need to rebuild 30' bridge at Gold Creek for construction period Improve 500' of existing road	Would need to rebuild 30' bridge at Gold Creek for construction period Improve 11,500' of road build 7500' of new road
4. SUITABILITY FOR FUTURE EXPANSION	Area exists for any future expansion	Area exists for any future expansion	Area exists for any future expansion	Area exists for any future expansion
5. SUITABLE TOPOGRAPHY	Small amount of terracing needed to prepare site	Terracing needed to level area suitable for site	Level	Terracing needed
6. SUITABLE SOILS TO SUPPORT EQUIPMENT	Second best soils for substa	Soils with some clay and silt .	Best soils for substation site	Good soils for substa
7. CRITICAL HABITAT FOR DEER & ELK	Located in center of critical winter habitat	Located in key winter range	Located near known elk calving ground	No critical habitat
8. VISUAL IMPACTS	Visible from I-90, communities and farmsteads	Near road to Rock Lake and National Forest land	Near two homes and road to National Forest land	Some structures may be visible from I-90
9. IRRIGATED LAND	No impacts	No impacts	No impacts	No impacts
10. COMPATIBILITY WITH EXIST. & FUTURE LAND USES	Conflicts with wildlife goal of country plan	No conflict	No conflict Needs noise abatement for nearby homes	No conflict
11. ALTERNATE CORRIDORS GOING THROUGH THE SITE	Designated, B, C, D, E, F	Designated, B, C, D, E, F	All corridors	AAA
12. UTILITIES (TELEPHONE, ELECTRICITY)	Longest distances to construct new utility lines	Utility lines near site, but tie lines will be needed	Need to upgrade existing lines	New utility lines needed

Black Mountain +A Alternative falls generally in the middle of the rankings. It ranks fourth highest in total impacts and sixth highest in per-mile impacts.

Black Mountain +AA Alternative has the lowest score for agriculture. It has the third lowest scores for surface water, rangeland, and human population. Total impacts rank sixth highest; per-mile impacts rank fourth highest.

The Black Mountain +AAA Alternative falls generally in the middle of the rankings. It ranks fifth highest in total impacts, and second highest in per-mile impacts.

Alternative B has the lowest impacts of all the alternatives for recreation and the second lowest ranking for length (equal to Alternative C), agriculture, rangeland, and prehistoric/historic impacts. It ranks sixth lowest for total impacts and highest for per-mile impacts.

Alternative C ranks lowest in two categories: rangeland, and prehistoric/historic. This alternative also ranks second in length (same as Alternative B), visual, human population, and total impacts. The rest of the resource areas generally rank between third lowest and fifth highest. It is second lowest in total impacts and third lowest in per-mile impacts.

Alternative D has the third highest impacts of all the alternatives for fish and wildlife, land suitability, vegetative cover, visual resources, surface water, agriculture, recreation, and per-mile impacts. The rest of the categories rank between fourth lowest and fourth highest. It ranks third highest in total impacts and fourth lowest in per-mile impacts.

Alternative E ranks highest in impacts for surface water, commercial forest land, and recreation. It ranks second highest in fish and wildlife, land suitability, vegetative cover, prehistoric/historic, and visual impacts. This alternative is also second highest in total impacts. It ranks fifth lowest in per-mile impacts.

Alternative F ranks highest of all the corridor alternatives in ten categories, including total impact. This is the longest of all the alternatives. It has the highest total impacts but the lowest per-mile impacts.

There is a considerable difference in some alternatives between the ranking on total impact scores and the per-mile impacts. Alternative F ranks the highest for total impact score, yet has the lowest per-mile impact score. But this low impact per mile, which could indicate that Route F may be the best "environmental" route, is offset by its greatly

increased length and total impacts. By contrast, the Designated Corridor ranks the lowest for total impact score, and second lowest for per-mile impact score, which would make the Designated Corridor a better environmental choice than Alternative F, since both length or total impacts and per-mile impacts are minimized. A similar comparison may be made between all corridors.

The environmental information summarized in Table 7 indicates that the environmental impacts, as determined by the TER method, are lowest for the Designated Corridor, with Alternative C the next lowest. The Designated Corridor also has the lowest historic and archeological impacts, and the lowest visual impacts.

Alternative F has the highest impacts in seven criteria categories and second highest in three other categories. Alternative E has the second highest impacts in most of the criteria categories.

As shown on Table 8, the environmental consequences and evaluation criteria for the alternatives in the Deer Lodge area vary widely. The local landowners have emphasized the avoidance of irrigated lands. They also emphasized keeping the transmission line on rangeland, rather than on agricultural lands.

The alternative shown as having the lowest and/or low impacts for most of the major environmental considerations is the Thunderbolt Mountain +AA Alternative.

Comparisons of the alternatives against Project Development and Jurisdictional criteria are summarized in Table 9. Because of the longer length and the impacts usually associated with length, Alternatives E and F have the highest impacts. These two corridors (E and F) also cross the most State and Federal lands, and have the highest potential for paralleling existing transmission lines.

Construction costs and electrical losses are usually directly associated with length. The shorter the line, the lower the total construction costs and electrical losses. The Thunderbolt Mountain +AAA Alternative is among the lowest in both categories; the Thunderbolt AA Alternative is equal in length and electrical losses, but would have slightly increased construction costs.

The Black Mountain +AA Alternative crosses the fewest miles of State and Federal lands and has the least potential for paralleling existing transmission lines. The Black Mountain +AAA is second lowest in both categories. Alternative E and F, respectively, have the highest and second highest totals of public lands and potentials for paralleling existing lines.

The alternatives shown in Table 9 as having the lowest and/or low impacts for most of the Project Development and Jurisdictional Criteria is the Thunderbolt +AAA Alternative.

The Deer Lodge Valley Resource Association opposes the location of the Designated Corridor, Alternative B and Alternative C. The Montana Department of Fish, Wildlife, and Parks has stated officially that the waterfowl impacts associated with Alternative D cannot be mitigated. Residents of Wildflower Hills Subdivision on Beck Hill, north of Deer Lodge, oppose the A and AAA routings. Residents of Gold Creek oppose all corridors passing through the Gold Creek Area.

The National Park Service commented that the Thunderbolt +A Alternative would have the greatest visual impact on the Grant-Kohrs National Historic Site, while the Black Mountain +AAA Alternative would have the least visual impact. The U.S. Fish and Wildlife Service commented that the Black Mountain +AAA Alternative appeared to be the best route in the Deer Lodge Valley area. The Environmental Protection Agency commented that the Thunderbolt +AA Alternative would be a good choice. The Continental Divide Trail Society commented that the designated route as described in the draft Supplement would not result in unacceptable impacts.

GARRISON SUBSTATION

This is Chapter 4 which presents the substation alternatives and their environmental consequences and mitigation in accordance with 40 CFR 1502.10 (e) and (g). The three Federal agencies proposed alternative is Substation Site 3A at Pikes Peak Creek. A brief discussion of substation considerations is included in Appendix A, pages A-10 and A-11.

Garrison Substation, proposed for the Deer Lodge Valley area, would be constructed to serve electrical loads in the Butte, Missoula, and Helena areas. To do this, connections are required to both the BPA Hot Springs-Anaconda 230-kV line and to The Montana Power Company's Hot Springs-Ovando-Anaconda 230-kV line. This connection will make the system more efficient, will provide long-range support, and will minimize the number of future 230-kV line connections. The proximity of two existing 230-kV lines in the Garrison area is one of the principal reasons for integrating Colstrip facilities there. The lines join southwest of Garrison and parallel each other south to the Anaconda area. Where the existing lines parallel each other, less additional line would be necessary to connect them to the substation.

Initially, thirteen potential substation locations, scattered from about five miles southwest of Garrison to approximately seven miles southwest of Deer Lodge, were studied. All but two were dropped from further study for the following reasons:

1. Yearlong access into the sites could not be assured. During the winter months, drifting snow tends to close the road in swales and gulches. Approximately six miles of existing road would have to be reconstructed to move heavy pieces of equipment to the sites.
2. A source of low-voltage electricity would have to be constructed into the area to operate switches and other electrical equipment, in case of failure in the 500-kV transmission system.
3. Topography in the area would require extensive cuts and fills (earthmoving) to prepare a substation site.

The remaining two sites became Substation Sites 1 and 2 for the purposes of this supplement.

As the number of alternative corridors expanded, a third potential substation location was identified for further study. This additional site is Substation Site 3.

During public hearings and meetings held for comments on the Draft Supplement, an alternate to substation site 3 was located for study, and became Substation Site 3A.

Substation Sites 1 and 2 would be located adjacent to the existing BPA Hot Springs-Anaconda and MPC Hot Springs-Ovando-Anaconda 230-kV transmission lines. No additional 230-kV lines would be needed to interconnect with the existing lines.

At Substation Site 3, approximately 6 miles of double-circuit 230-kV lines would be required to interconnect MPC's Hot Springs-Ovando-Anaconda line. The line would be likely to parallel BPA's existing 230-kV transmission line within the Designated Corridor. The double-circuit 230-kV lines would consist of steel towers averaging 120 feet high, with three conductors on each side. Spacing of the steel towers would average 1,150 feet, on a right-of-way 100 feet wide. Impacts of the 230-kV line would be similar to those described for the Designated Corridor in that area.

For Substation Site 3A, approximately 4.5 miles of double-circuit 230-kV line would be required: 1.8 miles to interconnect with MPC's 230-kV Hot Springs-Ovando-Anaconda line and 2.7 miles to interconnect with BPA's Hot Springs-Anaconda lines. The double-circuit lines would be as described above for Substation Site 3. The 230-kV transmission lines would be within the Alternate AAA corridor. The environmental impacts would be very similar to those addressed in this supplement for the 500-kV transmission line.

A description of the four alternative substation sites (see Figure 4) follows:

SUBSTATION SITE 1

Substation Site 1 is approximately 7.5 miles southwest of Deer Lodge, between Dempsey and Powell Creeks, in Sections 21 and 28; T.7N.; R.10W. It is adjacent to four existing transmission lines, including BPA's and MPC's 230-kV lines, and is located within the Designated Corridor.

SUBSTATION SITE 2

Substation Site 2 is south of Spring Gulch in Section 21; T.8N.; R.10W. It is approximately 6.5 miles northwest of Deer Lodge, adjacent to four existing transmission lines (including the BPA and MPC 230-kV lines with which it must be interconnected) and is within the Designated Corridor.

SUBSTATION SITE 3

Substation Site 3 is located near Gold Creek in Section 22; T.9N.; R.11W. It is approximately 4.5 miles southwest of Goldcreek, adjacent to BPA's existing 230-kV Hot Springs-Anaconda transmission line within the Designated Corridor.

SUBSTATION SITE 3A

Substation Site 3A is about 3 miles west of Garrison, in Section 20; T.9N.; R.10W. It is adjacent to MPC's existing Kerr-Anaconda 161-kV transmission line and is within the AAA Alternative.

Comparative environmental consequences of the proposed substation sites are described below:

Mitigation

The mitigation measures discussed in Chapter 2 of this supplement (see page 2-2) are also applicable to the alternative substation site. The measures listed below are applicable to the substation sites in particular.

1. The 30-foot wide bridge needed across the Clark Fork River at Gold Creek would be constructed across the Clark Fork River 100-year floodplain. It would be designed to withstand flooding.
2. To meet EPA noise standards at Site 3, BPA would need to install low noise transformers and reactors, and possibly earth berms or sound walls around the substation site, due to the proximity of homes to the site.
3. Vegetative screening to reduce visual impacts would be required at Substation Site 3.

Climate

The consequences of substation construction and operation on climate would be roughly equivalent for each of the four proposed substation sites. No site would be large enough to affect the overall climate. Clearing and preparation of the site would change the immediate area from a naturally occurring microclimate to an artificial microclimate. The effects of the microclimatic change would not extend significantly beyond the boundaries of any site, but would persist for the life of the facility.

Air Quality

Air quality would be affected during construction of the substation by dust and the exhaust of internal combustion engines. A small amount of slash, generated during road construction for access to Site 3A, may be burned. This would add small amounts of particulates to the air. The impact would be low, direct, and short-term. Once construction was completed, both dust and engine exhaust would be reduced to low levels.

Noise

As stated in the Colstrip Project EIS: "The expansion of existing substations and construction of new ones to accommodate the proposed transmission lines are not expected to adversely impact the noise environment outside of the property lines that enclose them (BPA 1977). Noise levels on the substation sites are not expected to exceed normal industrial personnel exposure levels." (Vol. 1, p. 3.2-6)

BPA policy states that noise levels will not exceed 48 dBA in the 120 hertz octave band at the substation property line. Within about 200 feet of the substation, higher frequency noises such as those created by transformer cooling fans would be heard. High frequency noises are rapidly absorbed by the ground, air, trees, and other obstacles. Noise from transformers and reactors is in the 120 hertz octave band. This low frequency humming sound dominates beyond 500 feet, because low frequency sounds are not absorbed, but go through and around obstacles. They would be heard for greater distances.

Because the State of Montana has no noise level standards for substations, BPA must comply with EPA noise standards. In order to limit equipment noise at the boundary of substation Site 3 to 48 dBA (120 hz), BPA will have to install low noise transformers and reactors. In noise sensitive locations, BPA may also need to build earthberms or soundwalls around Substation Site 3, should it be selected.

Substation Sites 1, 2, and 3A are proposed in areas of no existing human habitation. Because Substation Site 3 is proposed in an area with houses less than one-quarter mile distant, noise mitigation would be required. Impacts would be low, direct, and long-term.

Geology and Soils

All sites are located in gravel-capped bench areas. Geologic impacts of any site would be low. Landslide hazard is slight to moderate. Erosion potential of all sites is moderate. Proposed Sites 1 and 3 are relatively level; Sites 2 and 3A, however, are sloping and would require

extensive excavation and/or addition of fill to develop a suitable site. This additional site preparation would make sites 2 and 3A susceptible to soil erosion during construction. Revegetation of disturbed areas and cut slopes would reduce soil erosion at these sites. Impacts would be direct and long-term.

Water Resources

The risk of sediment in surface drainages from soil disturbed by construction activities is low. Water courses and wet conditions at Site 2 would cause a small amount of additional sediment to be deposited in streams during construction, a direct, short-term impact. Site 3, subject to high water table during periods of runoff, would require diversion of water around the site. This diversion would not significantly affect water resources in the area. All four sites are crossed by or adjacent to intermittent streams. During the first season after construction, streams would be subject to temporary increases in turbidity levels.

Plants and Animals

Plants

All four proposed sites are grass-covered. During construction, all vegetation at the selected substation site would be removed and the site would not be revegetated during the operating life of the substation. Environmental consequences would be moderate to low, direct, and long-term.

Animals

Substation Site 1 is located within a critical elk and deer winter range (see Animals discussion for the Designated Corridor, Deer Lodge area). South-facing slopes are important foraging places for elk, especially during severe winters when these slopes are the only natural source of feed. The size of the substation site, along with the associated access roads and transmission lines, would remove a substantial amount of winter forage from this critical winter range. Continuous human activity in and around the substation site would have adverse effects upon the elk. Elk normally avoid such conditions. Impacts would be high, direct, and long-term.

Substation Site 2 is also proposed within critical elk and deer winter range. However, the slopes at Site 2 are more north-facing and not as important as Site 1 for elk during winter months. Location of the

substation in this area would have fewer adverse consequences upon the elk than would Substation Site 1. Impacts would be moderate, direct, and long-term.

Substation Site 3 is also proposed within key elk and deer winter range, but, as for Substation Site 2, slopes here are also north-facing. Substation Site 3 is also very near to calving grounds for the Wallace elk herd, along the edges of the timber in Section 21, T. 9 N.; R. 11 W. According to the Montana Department of Fish, Wildlife, and Parks, a substation located on open ground in Section 22, away from the timber, would have very little, if any, adverse impact. Impacts would be low, direct, and long-term.

Substation Site 3A is located in a grassy area, well away from any critical winter range or calving grounds.

At all four sites, small birds, rodents, and mammals which normally inhabit the grasslands would be displaced by the construction of the substation.

Threatened and Endangered Species

Only two threatened or endangered species occur in the impact area of the proposed transmission line: bald eagle and peregrine falcon. Both species are far-ranging raptors that occur over most of North America, but nests of neither species have been confirmed in the vicinity of the project (May 1980 aerial search). Wildlife studies undertaken as part of the study will monitor for confirmation of reported nests and for possible effects on these species and BPA will take whatever mitigation measures are appropriate if adverse effects are discussed. No adverse effects on either species are known to occur from transmission lines. Neither species has a designated critical habitat within the study area; thus there will be no adverse effect on such habitat.

Cultural Resources

Site 3 is in the Gold Creek Historic District (which includes Pioneer) would have moderate, direct, and long-term impacts. There are no known prehistoric or historic sites at any of the other substation sites. The same survey and consultation process mentioned for the corridor will apply to the substation sites.

Esthetic Impacts

Substation Site 1 would be visible from I-90 and from homes, farmsteads, and communities in the Deer Lodge Valley. The site is about seven and

one-half miles southwest of Deer Lodge and about 6 miles west of I-90. The area is in a foreground/middle ground view zone. Visual impacts would be low to moderate.

Substation Site 2 would be visible from the road to Rock Lake and adjacent National Forest lands. The site would be in a foreground/midleground view zone. Visual impacts would be moderate.

Substation Site 3 would be visible from nearby homes and farmsteads, and is adjacent to, and would require relocation of a primary access road into the Deer Lodge National Forest. The site would be in a Level 1 foreground/midleground view zone. Visual impacts would be moderate, because it is close to several homes and to a primary access road into the Deer Lodge National Forest. BPA would investigate the use of vegetative screening to reduce those visual impacts.

Substation Site 3A is not near any homes or major access roads, but may have certain structures visible from I-90. The site would be in a background view zone. Visual impacts would be moderate.

Impacts at any of the four sites would be direct and long-term.

Recreation

Impacts of substation construction on recreation resources were based upon a number of factors, including access, presence of fish and wildlife, scenic quality, existing land use, presence of existing recreation facilities, and suitability of topography for recreation. Recreation impacts at Substation Sites 1 and 2 would be low, while they would be moderate at Substation Site 3, and high at Substation Site 3A.

Land Use

Agriculture

Substation Site 3 is on grazing land. Removal of 35 acres from the area would not significantly reduce the grazing base and would not interfere with use of adjacent lands. No irrigated or dryland farmland would be affected by any substation site.

Designated Management Areas

All proposed sites are in Powell County. The Powell County Land Use Plan promotes the preservation of agricultural lands; its policies are also designed to assure that development will minimize adverse effects on critical wildlife areas. Substation Site 1 would conflict with the Powell County policies regarding wildlife areas.

Transportation

Substation Site 1 would require about one mile of new road construction. Site 2 would require rebuilding about five and one half miles of county and Forest Service roads, from near the airport to the site.

Substation Sites 3 and 3A would require a new 30-foot-wide single-span bridge crossing the Clark Fork River at Goldcreek, and a bridge or culvert across Gold Creek.

There will be some temporary increases in turbidity of the Clark Fork during construction, but there will be no structures in the Clark Fork River itself. The bridge abutments will be on either side of the river. The 100-year floodplain of the river is about 600 feet wide at the current road causeway and widens to between 1300 and 1700 feet on either side thereof. The bridge would be designed to withstand flooding, and would not alter floodplain characteristics or create the potential for greater loss of property or life during flooding.

The crossing at Gold Creek, while in an undesignated floodplain, will be designed to withstand flooding, and will not alter floodplain characteristics or create the potential for greater loss of capacity or life during flooding.

Substation Site 3 would also require the relocation of about 500 feet of existing FS road Number 636, the Gold Creek Road, giving access to the North End area. This road is used both for recreation and for timber hauling.

Site 3A would require improving about 11,500 feet of existing road and building about 7500 feet of new road into the substation site.

FINDINGS

Comparison of the four substation sites (see Table 10) does not reveal any great differences between them except in impacts to the residents of Goldcreek at 3, excavation required at Site 2 and 3A, and wildlife impacts at Site 1.

All four substation sites would be close to the load centers (Butte, Helena, and Missoula) to be served from Colstrip Unit 3 and the Garrison Substation.

Any future transmission lines could be constructed to any of the substation sites. However, Substation Site 1 could require those lines to cross the Deer Lodge Valley. The other three sites could possibly accommodate any additional lines with little or no greater line length and avoid the Valley.

Substation Site 3A would require the most new road construction or road rebuilding.

Substation Sites 1 and 2 are located in key winter range for elk and deer. Substation Site 3 is near an elk calving area. The south-facing slopes around Substation Site 1 are critical to elk survival during very severe winters, making the wildlife impact from Site 1 the highest of the four sites.

Sites 2 and 3A will require more excavation than Sites 1 and 3.

The visual impacts would be highest for Site 3, because of its proximity to several homes and to a primary access road into the Deer Lodge National Forest. It would not, however, be visible from the Deer Lodge Valley or to travelers on Interstate 90.

The cost of building any of the substation sites would be in the 25 to 27 million dollar range, but because of tradeoffs among the sites, the cost is for different things at each site as follows:

Site 1 costs are for excavation, one mile of new road, and a line for low voltage electric power.

Site 2 costs are for excavation, rebuilding five and one half miles of county and FS roads from near the Deer Lodge airport to the site, and a line for low voltage electric power.

Site 3 costs are for noise abatement, two bridges, improving 500 feet of existing road, an extra communications site, and appearance improvements at the substation.

Site 3A costs are for excavation, replacement of 2 bridges, rebuilding 11500 feet of road, building 7500 feet of new road, an extra communications site, and a line for low voltage electric power.

Substation Sites 1 and 2 would limit the selection of corridors to those crossing the Deer Lodge Valley near Deer Lodge. Substation Site 3 allows any corridor alternative to be used. Substation Site 3A requires the use of the AAA Alternative.

In identifying a proposed site,, the location of a corridor appears to be the most significant factor.

Using the criteria provided in Table 10, the substation sites would be ranked as follows, with the least impact site listed first.

Substation Site 3
Substation Site 3A
Substation Site 2
Substation Site 1

D E S C R I P T I O N O F T H E A F F E C T E D
E N V I R O N M E N T

BOULDER, BASIN, AND DEER LODGE AREAS

STUDY AREA BOUNDARY

The study area boundaries for the supplement to the EIS were established after all the alternate corridors to be analyzed were identified and mapped.

AFFECTED ENVIRONMENT

The existing environment that is to be affected by the project is described in Section 3.1.1, and further described in the Colstrip Project EIS, Sections 3.1.1 and 3.1.2, Volume 2. Any corrections that have been made can be found on corresponding pages of Volume 3. Inasmuch as these selections cover the total length of the transmission line, a synopsis presented here describes only the affected environment in the Basin, Boulder, and Deer Lodge areas. For a complete discussion of the existing environment, see the Colstrip Project EIS, Volumes 1 and 3.

Climate

The study area straddles the Continental Divide; hence, the area's climate varies somewhat from east to west. In general, winters are cold, and the summers cool. Precipitation is distributed rather evenly throughout the year. The winds are generally light. Snow may fall as late as May and may remain on the ground until June or July. The potential for lightning strikes is greatest near the Divide.

Air Quality

The study area is in Montana's Helena Air Quality Control Region (AQCR). Most particulate emissions originate from such sources as unpaved roads, agriculture, and open burning. Industrial sources emit small amounts of particulates and some sulfur dioxide.

Noise

The alternative transmission corridors cross areas that are mostly rural, but some vicinities along the way are populated.

Noise levels in rural areas range from 30 to 50 dBA; and in urban areas the levels go as high as 65 dBA.

Geology

The rock formations that have been exposed vary widely in age. Some are more than 600 million years old. The mountains on either side of the Deer Lodge Valley are tertiary and cretaceous volcanics, with the Boulder batholith near Basin and Boulder. They are composed of quartz, latite, and andesite. Unconsolidated deposits of tertiary sedimentary rocks and alluvium composed of sand, silt, clay, and gravel occupy nearly all stream valleys. The mountains east of the Deer Lodge Valley, also part of the Boulder batholith, have areas of shale and glacial drift along the lower slopes.

Seismicity

The study area lies in an active earthquake zone.

Geologic Hazards

The important geologic hazards are slump-earthflows and soil dips.

Mineral Resources

The metamorphic and intrusive igneous rocks often contain metallic deposits (gold, silver, copper, and molybdenum). Many small deposits of sand, gravel, and limestone also occur.

Soils

The valley soils are primarily well-drained loams, often of clay, with slope gradients of 20 percent or less. The bedrock is buried beneath thick layers of water-deposited material.

The mountain soils are mainly loams, often of silt, with gradients varying from 25 to 70 percent. The bedrock is often 5 feet or less below the surface.

The suitability of the soils for construction will be affected by their erosion potential, composition, and stability.

Water Resources

The surface waters in the area consist mostly of streams. They flow toward the Columbia and Mississippi Rivers.

Plants and Animals

The forest community in the study area is lodgepole pine/Douglas fir. The vegetation changes with the altitude. Many grasses grow on the lower elevations, which are warm and dry. Upper elevations are cool and moist, with little ground cover. The forest community is valued for its timber, wildlife, and grazing lands.

Cottonwoods and willows dominate the vegetation along the streams. About 1.5 percent of the vegetation found within the corridors is riparian (wetland). The composition of much of this vegetation has been altered by grazing.

Agricultural practices have also drastically affected vegetative types and composition in the valley grasslands and adjacent foothills.

Foothill sagebrush occupies less than two percent of the area.

Elk, deer, moose, and bear populations are large enough to attract hunters.

The golden eagle is a common large raptor, although occurrences of the bald eagle have been reported (see following discussion).

Beaver and mink inhabit lands along many of the streams.

Water-oriented birds are found most often near standing bodies of water in the Warm Springs area.

Trout and other coldwater game fish are found in the major drainages, such as those of the Boulder and Clark Fork rivers.

Threatened and Endangered Species

The plant Grindelia howellii is a candidate for addition to the list of endangered and threatened plants. It grows only on rocky granite crags at elevations of 3,800 to 4,400 feet in the forests in the foothills of northern Powell and Missoula Counties.

The grizzly bear is a threatened species. One was killed near the Continental Divide during the spring of 1980. Another possible sighting

was reported. These sightings are judged to be "accidental". The grizzly population is not thought to be viable.

The Peregrine Falcon and Bald Eagle, both of which are endangered, are likely to be present, at least seasonally.

For additional discussion, see Endangered Species Act Section in Chapter 7, Consultation, Review and Permit Requirements.

Cultural Resources

Archeological and historic resources will be specifically identified through surveys when a final corridor selection is made. The Grant Cabin site, Pioneer, Gold Creek Historic District, Mullan Road, Emery, Grant-Kohrs Ranch, and the Montana Territorial and State Prison are among the historic resources in the Deer Lodge area.

Other historic resources include the Hearst Free Library and Marcus (Daly) Hotel at Anaconda, Fraternity Hall at Elkhorn, and the Wickes Historic District. The Boulder Historic District includes the Jefferson County Courthouse, and the Boulder River Administration Building. The Boulder Hot Springs Hotel is south and east of Boulder. The Basin Historic District has numerous sites, including Basin City, Comet and many mines.

Esthetic Environment

The study area contains portions of the Northern Rocky Mountains physiographic region, consisting of high rugged mountain ranges embracing broad fertile valleys. These ranges are a series of individual parallel ridges trending northwest to southeast. They are up to 20 miles wide and between 50 and 100 miles long. They often rise more than 5,000 feet above the valley floors to reach elevations approaching 10,000 feet. The rivers flow at elevations of 3,000 to 5,000 feet; their valleys are typically 5 to 20 miles wide and 25 to 75 miles long.

Most of the study area's A+ and A quality landscapes occur in mountainous areas. The Anaconda Range contain the only A+ lands, although concentrations of outstanding (A) scenery also exist in the mountains on both sides of the Continental Divide, and in the Elkhorns northeast of Boulder.

The sensitivity of an area to a major transmission line as seen from certain land uses and roads is classed in decreasing order as:

Level One - Includes land uses dependent on natural settings, high volume roads, pipe-irrigated agricultural lands, and urban and suburban areas. Less travelled areas seen from a Level One area are mapped as Level One. Generally, most dwellings and north-south highways are in river valleys. East-west highways climb out of the valleys through infrequent mountain passes. Most valleys and major passes have Level One sensitivity.

Level Two - Consists of areas visible from commercial air routes, flood-irrigated agricultural lands and areas of dispersed Forest lands, and wildlife management areas. In the mountains, Level Two areas are often screened from view of Level One observers and are, therefore, more numerous than Level Two areas in the Plains.

Level Three - Consists of all seldom seen areas including most of the dryland agricultural areas.

The observer distance also determines how visually sensitive a piece of land is. Consequently, for this study, seen areas were divided into distance zones:

Foreground/Middleground: The visible zone from a road or other observer point up to five miles. Details of management activities are easily discerned in this zone.

Background: The visible zone beyond the Foreground/Middleground, usually between five and fifteen miles away from a road or other observer point. Details of management activities are not easily discernible in this zone.

Seldom Seen: All areas not identified in the previous two zones, generally areas more than fifteen miles from a road or use area, or areas completely hidden from view by topography or vegetative barriers.

Level One Foreground/Middleground zones are concentrated in the valleys where most of the roads and use areas are. Background zones generally extend only to the crest of the mountain ranges.

Recreation

In general, forests and mountains are more attractive for recreation than are rangelands. However, people are likely to fish, hunt, and play wherever the opportunity exists.

According to the Montana Department of Fish, Wildlife, and Parks survey, driving and walking for pleasure are preferred activities, followed by sight-seeing, fishing, back-country touring, and picnicking.

Two National or Historic trails--the Mullan Road and the Continental Divide National Scenic Trail--intersect the study area.

The Spring Emery Road, east of Deer Lodge, is part of a scenic drive and is in the process of being submitted to the National Recreational Trail System.

Land Use

Agriculture

Agriculture is Montana's largest industry. The most important factor in evaluating impact of the transmission system as it affects agriculture is the amount of land taken out of production.

The irrigated lands are along the floodplains and terraces near headwaters and primary streams. Forage, including irrigated pastures and hay, is the main crop. A cereal crop is grown occasionally when land is being prepared for production. The land is reseeded usually to a crop of perennial forage. Irrigated pastures are used to supplement grazing in early spring and late fall. One or two cuttings are taken from the haylands. The hay is used for winter feed or sold as a cash crop.

Production is usually increased when gravity-flow irrigated systems are converted to sprinkler irrigation with an adequate fertilizer program.

Much of the land is used for livestock production. Some of the more productive rangelands include the grassland and riparian types. The less productive rangelands are found in the forests.

Transportation

The present pattern of transportation corridors strongly reflects their historic development. Interstate 90 follows the Burlington Northern and Milwaukee Road main lines through the Deer Lodge Valley. Interstate 15 follows the Burlington Northern Railway, formerly the Montana Central Railroad, through Elk Park, Bison Creek, and down the Boulder River to Boulder.

Unsurfaced and primitive roads are important in providing construction and maintenance access to the transmission system.

A transmission line corridor runs along the west side of Deer Lodge Valley. It does not contain any 500-kV transmission lines, however.

There are airports near Deer Lodge and Anaconda, and airstrips near Basin and Boulder.

Social and Economic Factors

The study area encompasses portions of Deer Lodge, Jefferson, Powell, and Silver Bow counties. Population figures for 1970 for the major centers are listed below, with updates from the 1980 census where available. Most comparable 1980 census information will not be available until the fall of 1981. Note that the 1980 Butte and Anaconda figures encompass greater areas than the 1970 figures.

<u>1970</u>	<u>1980</u>
Butte.....23,368	Butte (Silver Bow).....37,205
Anaconda..... 9,771	Anaconda (Deer Lodge).....12,518
Deer Lodge..... 4,306	Deer Lodge..... 4,023
Boulder..... 1,342	Boulder (includes Basin).... 1,441
Walkerville..... 1,097	Walkerville..... 887
Opportunity..... 650	Opportunity.....Unavailable
Basin..... 516	Basin.....Unavailable
Warm Springs..... 500	Warm Springs.....Unavailable
Garrison..... 150	Garrison.....Unavailable
Galen..... 50	Galen.....Unavailable
Gold Creek..... 35	Gold Creek.....Unavailable

Most of the people in the study area work in mining or agriculture.

Housing for the permanent population is generally adequate.

The proposed BPA transmission facilities will be Federal; hence, they will not be subject to State and local taxes. However, personal income taxes will be paid by construction and maintenance workers.

CONSULTATION AND COORDINATION

SUMMARY OF PUBLIC INVOLVEMENT

On February 7, 8, and 9, 1980, public workshops were held in the communities of Deer Lodge, Townsend, and Boulder to obtain local input on issues to be considered during the location of a centerline within the designated 2-mile-wide corridor for the transmission line.

Those who attended the workshops in Boulder declined to participate. They said they wanted to discuss corridor location, not issues for a centerline within the corridor. Individuals attending the workshops in Deer Lodge and Townsend did participate in the development of issues pertaining to centerline location, but they, too, took issue with the corridor location.

A written analysis of the issues identified at the Deer Lodge and Townsend workshops was sent to Mr. Gordon Brandenburger, BPA's Kalispell District Manager. After his review, copies were mailed on August 25, 1980, to those who had attended the workshops. Copies were also sent to the Montana Department of Natural Resources and Conservation on August 14, 1980, and to organizations and persons who had expressed interest or had attended the workshops.

George Bell, BPA Assistant Administrator, and Forest Service Chief Max Peterson met with Senator Melcher in Washington, D.C., on February 7, 1980. They discussed the merits of locating the 500-kV transmission line outside the 2-mile wide corridor around Boulder. On April 8, 1980, Mr. Evan Barrett, field representative for Senator Melcher, requested a map showing tentative alternate transmission lines in the Boulder area.

Meetings were held in Boulder with the North Boulder Protective Association (NoBPA) on March 5, May 14, and June 18, 1980, to discuss possible alternate locations for the 500-kV transmission line. NoBPA wanted the line moved north of the airway beacon and microwave station and, if possible, onto Federal lands along the east side of Boulder Valley. The Boulder, Basin, and Elkhorn corridors were developed as a result of these meetings. At the June meeting, Mr. Dave Reider, chairman of NoBPA, said BPA appeared to have met many of the requests made by NoBPA and added that NoBPA had no additional information to offer.

A meeting was held in Deer Lodge at the request of the Deer Lodge Valley Resource Association (DLVRA) on June 21, 1980. The DLVRA wanted consideration given to locating the 500-kV transmission line outside the designated corridor where the line would have less impact on agricultural lands and on the appearance of Deer Lodge Valley. The people in Deer Lodge saw no rationale for locating Substation Site 1 between Powell and Dempsey creeks.

A Work Management Study Plan, developed and approved by BPA, BLM, and FS, details the environmental analysis for centerline location. Copies of the plan were sent June 25 and 26, 1980, to:

Senator John Melcher
Senator Max Baucus
Representative Pat Williams
State Representative Robert Marks
Mr. Dave Reider, Chairman of NoBPA
Mr. Steve Doherty, Helena representative
for Northern Plains Resource Council
Montana Department of Natural Resources and Conservation

On July 18, 1980, a meeting was held in Deer Lodge at the request of the DLVRA and Senator Melcher. BPA, BLM, and FS were requested to look for alternate corridors 1 to 2 miles north and south of the designated corridor, and around the north and south ends of the valley. These are alternative corridors B, C, A, and D, respectively.

A meeting with Senator Melcher and representatives of BPA, BLM, and FS was held October 15, 1980, to discuss alternatives A, B, C, D, and F. They agreed to look for additional alternatives that would avoid irrigated land.

On November 18, 1980, representatives of the DLVRA, local landowners, news media, Senator Melcher and his field staff, BPA, BLM, and FS met in Deer Lodge to review alternatives A, AA, B, C, D, E, and F.

On January 6, 1981, a letter was received from U.S. Representative Pat Williams requesting consideration of landowners' concerns in addition to natural resource and engineering factors.

During the last two weeks in February, meetings were held with the NoBPA and DLVRA organizations or their officers, representatives of state government, representatives of the Montana Congressional delegation, and officers of the Anaconda-Deer Lodge, Butte-Silver Bow, Powell, and Granite County Commissions.

Other contacts have been made by BPA with the various landowners potentially affected by location of the 500-kV transmission line.

The meetings and issues pertaining to the Colstrip 500-kV transmission line have been widely reported in the news media.

Public hearings on the Draft Supplement were held in Deer Lodge on March 24, 1981, with 123 people registering, and in Boulder on March 25, 1981, with 45 people registering. An additional 25 letters were received during the public comment period, which ended April 20, 1981. These

transcripts and letters are analyzed in the comment/response methodology and analysis section following. A total of 1663 comments from 175 individuals was analyzed. (A discussion of the Methodology for classifying and analyzing comments begins on p. 6-85.)

Comments on this Final Supplement will be taken for 30 days after the date of the Notice of Availability in the Federal Register, after which the Federal agencies will publish their Records of Decision.

COMMENTS AND RESPONSES

I. GENERAL PROJECT

Comment: I think another thing that concerns us in Montana is why do we have to build these transmission lines? (Joe Brand, DSC-81-T1-68)

Comment: The Colstrip Project is needed to satisfy demand for electricity in the Pacific Northwest, including Montana--whose demand? Where are the figures on demand? (Nancy Daniels, DSC-81-T2-20)

Comment: Number one, it's never been shown that the need for this power is actually real. (Sam Samson, DSC-81-T2-30)

Response: The U.S. Congress has resolved the issue of need by virtue of authorization and funding of BPA's activities. (House Joint Resolution 1139, later P.L. 95-482, October 18, 1978.) The Montana Board of Natural Resources and Conservation made the decision in 1976 that the Colstrip Project Units 3 and 4 and the 500-kV transmission lines from Colstrip to Hot Springs were needed to meet projected electric energy demand in and outside Montana by 1984. The decision by the Board was supported by data provided by Montana Power Company in their application dated June 1973, relating to needs in Western Montana and the Pacific Northwest.

The need issue was further addressed in the Colstrip Project EIS. That EIS produced a decision to proceed with the project, a decision that withstood the test of both administrative and legal review as provided for in Federal law and procedures. The State of Montana issued the certificate of need, as described in the draft Supplement.

Comment: "By selling power to the BPA, the agency would only be sending it back to Montana and the transportation costs would add to the consumer price. It's not a matter of selling surplus power, because Montana has no surplus generating power at present. We need what we have got,..." it's going to cost the Montana consumer more money to try to get power back from the Bonneville Power Company. This is from the Montana Standard and it's dated February 17, 1981. (Joe Brand, DSC-81-T1-71)

Response: There are minor surpluses of power in Montana at present, with projected deficits of power in 1982 and 1983. This was confirmed by Bruce Lovelin, Area Engineer, BPA Kalispell District in a telephone conversation with Mr. Gregg of Montana Power Company on April 29, 1981.

Comment: This Townsend-Garrison Substation portion of the Colstrip 500-kV line is a far-reaching project affecting many people. Who are these two men to instantly decide on a location? (Robert Lewis, DSC-81-L35-1)

Comment: Why should the Forest Service and BLM have the power to approve this project when it passes over private lands? Their jurisdiction should be restricted to their own land lands. They don't care what happens to Joe Landowner. (Sam Samson, DSC-81-T2-36)

Comment: The crucial decision that resulted in transmission lines from the Colstrip generating plants passing through the Deer Lodge Valley was made by government agencies that don't even have jurisdiction over private lands. Namely, the Forest Service and the Bureau of Land Management. (Toni Kelley, DSC-81-T1-105)

Response: The Bureau of Land Management and U.S. Forest Service decision commits only the public lands administered respectively by those agencies. But there is no question that the Federal land decision directly affects other associated lands. For this reason, the Federal courts have repeatedly held that environmental assessments being conducted for projects affecting Federal lands must examine the entire scope of the project. BPA will make the decision on non-Federal lands.

Comment: Enabling legislation places jurisdictional limits on BPA activities at the edge of the Columbia River Basin, except in special circumstances. Where does BPA get its legislative authority, either specific or implied, to construct transmission lines east of the Continental Divide? (Philip Barrett, DSC-81-L39-1)

Comment: ...why is Bonneville here? Why isn't Montana Power building it?

...Montana Power used as an excuse to bring Bonneville into this the fact that the Indian Tribe over in the Arlee area wouldn't allow them to go through, but since BPA already had an easement, therefore they would ask them to come in and build the line for them,...

...the excuse that for BPA to be in here at all is not a valid one, it was based upon false pretenses, and I think is totally false. (David Rieder, DSC-81-T2-15)

Comment: On page 1-1 the State granted MPC a Certificate of Environmental Compatibility and Public Need. Next thing BPA's doing it. No explanation I've heard yet explains that. (Debbie Sheehan, DSC-81-T2L20)

Comment: BPA is using federal push to achieve its non-federal goals. (Char Webb, DSC-81-T2L21)

Comment: The authority for the BPA line is somewhat of a mystery still as far as how it came about. Montana Power supposedly asked the BPA and et cetera, or maybe BPA asked Montana Power, but what we know is that the bill or the congressional bill simply stated that the BPA had permission

to interconnect with the Bell station, with the Colstrip 3 and 4 transmission line. It did not say where. The testimony at the hearings was that the Flathead Indian Reservation, the Salish and Kootenai tribes, were presenting a problem.

Now, as Dave Rieder has pointed out, that reservation is a long way from Townsend, Montana. (Paul B. Smith, DSC-81-T2-42)

Comment: ...there is no underlying federal authority allowing the BPA to construct any portion of the actual powerline facility between Colstrip and Hot Springs, Montana. Instead, the BPA is authorized only to "interconnect" with the powerline facility, which Congress contemplated would be constructed by the Montana Power Company, pursuant to authorization by the State of Montana through its Major Facility Siting Act and review processes. (Richard J. Llewellyn, DSC-81-L43-6)

Response: Section 4 of the Bonneville Project Act of 1937 provides the Administrator with authority to construct inter-connecting facilities within the BPA service area. To extend into a new portion of the service area such as the Garrison-Townsend section requires Congressional approval via Act of Congress. This approval was provided on October 18, 1978 by House Joint Resolution 1139 (P.L. 95-482). There is no limitation on that "interconnection" as is suggested.

In considering whether Bonneville or another regional public or private entity should construct a given segment of the regional transmission system, Bonneville and other regional power entities strive to operate under the "one-utility concept". This concept entails the planning, construction, and operation of regional generation and transmission resources as if such resources were owned and operated by a single entity. The purpose is to achieve the maximum environmental, economic, and social benefits for the region. As a result of the "one-utility concept" and Bonneville's obligations and authorities under the Federal Columbia River Transmission System Act (16 U.S. 838 et seq.), Bonneville's policy regarding the integration of thermal plants with the Federal System was stated in the Administrator's August 10, 1976, Basic Planning Assumptions:

"Transmission for Thermal Plants: Unless otherwise planned by plant owners, BPA will plan to provide transmission and substation facilities necessary to transmit the electric power from the step-up transformer of the thermal plants to points on the main grid when delivery is made to the owners of the thermal plants. Similarly, BPA will plan to provide transmission and substation facilities to transmit electrical power from BPA's system to the step-down transformer of thermal plants for thermal plant station service. BPA will recover equitably its investment in facilities necessary to interconnect thermal plants. BPA will not plan to construct thermal interconnecting transmission facilities outside its service area.

In order to insure that project information on planning, scheduling, design, reconnaissance, environmental studies, and other pre-construction activities is available for federal and state licensing applications, facilities for interconnecting thermal plants for the BPA transmission system will be identified as soon as practicable after plant owners declare a firm site."

Factors which are considered in implementing the "one-utility concept" include:

- 1) The most economically and environmentally acceptable engineering plan of service;
- 2) The annual cost of operation for Bonneville and its customers, i.e., the region;
- 3) Maximum efficient utilization of existing and planned transmission and generation resources available to regional entities;
- 4) The environmental impacts of the alternatives; and
- 5) The orderly development and implementation of long-range regional power planning.

In accordance with the "one-utility concept", Bonneville builds planned additions to the regional grid to avoid duplication of transmission facilities and to accommodate the system plans of other regional power entities. The development and operation of a central regional power grid allows regional entities to share generation output and results in a more efficient system at a lower overall cost.

BPA, Montana Power Company, and the Colstrip participants agreed mutually, based on the "one-utility concept", that the point of integration with the BPA system should be at Hot Springs, with interconnections to the 230-kv transmission system in Montana at Helena and Broadview.

It is true that Montana Power Company was encountering difficulties in acquiring right-of-way across the Flathead Indian Reservation. These problems were encountered before the completion of the Federal EIS and of the comparative evaluation of alternatives by the Federal land management agencies charged with granting rights-of-way on Federal lands. Under the requirements of the Federal Land Policy and Management Act and the National Environmental Policy Act, the cooperating land management agencies and BPA (as the Federal lead agency) had to consider alternatives to the State-approved and applicant's proposed corridor. When Montana Power requested that BPA build the lines from its service

area, the transmission environmental studies had revealed that the State-approved corridor was not the best location from an environmental standpoint.

Realizing the above, the Montana Power Company was within its legal right, under BPA's policy and legal requirements, to request that Bonneville integrate the Colstrip generation at a point other than Hot Springs to spread line costs among regional rate payers. In addition, system studies completed by BPA and the Montana Power Company recognized that interconnection of BPA's 230 Hot Springs to Anaconda lines with Montana Power Company's 230 and 161-kV lines in the Garrison or Anaconda area was a better electrical plan. These considerations, the problems of acquiring right-of-way, and environmental considerations also influenced the request of Montana Power Company.

Comment: Your proposed action will not be taken or conducted in accordance with any coordinated land use plan developed by any of the participating federal agencies pursuant to the Federal Land Policy and Management Act of 1976, specifically 43 U.S.C. Section 1712. (Richard J. Llewellyn, DSC-81-L43)

Response: The Bureau of Land Management and Forest Service are the Federal land management agencies developing the EIS with BPA. Any decisions will be consistent with their land use plans.

Comment: We would specifically like the issues of the study agencies' position concerning their planned use and wilderness study area projects aired as they relate to proposed and possible corridors utilizing maximum public lands. (Martin Dippold, DSC-81-T1-5)

Response: All Federal lands may be considered for possible corridor locations except where specifically excluded. For example, corridors are not allowed in Wilderness areas. The only wilderness study area related to proposed and possible corridor locations between Townsend and Garrison is the Elkhorn Wilderness Study Area in the Elkhorn Mountains. An alternative through the Elkhorn Wilderness study area was addressed in the Draft Supplement as the Elkhorn-Twentyone Gulch Alternative on page 1-6. The Secretary of Agriculture has been directed by Congress to maintain the present wilderness character of the area until Congress determines the final disposition.

Comment: 1. The proposed action violates the Federal Land Policy and Management Act of 1976, P.L. 94-579, 43 U.S.C. 1701, et seq., in that you have totally failed to coordinate your decision-making process with the planning and management activities of various agencies of the State of Montana which are responsible for the planning of transmission facility corridors under the Montana Major Facility Siting Act, Section 75-20-101, et seq., M.C.A. (Richard J. Llewellyn, DSC-81-L43)

Response: BPA, as a Federal agency, is neither required nor authorized to submit its decision-making process to the procedures of the Montana Major Facility Siting Act. However, every effort is made to involve the State and interested individuals in planning and decisionmaking on this project. Opportunities were provided during the scoping process, public meetings, circulation of the draft EIS, and agency response to comments.

Comment: If BPA is going to build it, we would like the following:...
...we would like to see them come under the Montana Power -- or the Montana and state laws,... (Don Larson, DSC-81-T2-6)

Comment: BPA should not be exempt from Montana laws such as the Major Facilities Siting Act with which it refuses to comply. (Sam Samson, DSC-81-T2-33)

Comment: The next specific problem is that addressed to the BLM and the Forest Service. As you probably know, the BLM and the Forest Service have to give their approval to anyone that is going to get a right-of-way across their land. I believe the Federal Land Policy and Management Act dictates that they require any agency, whether it's a private agency, the BPA, or whatever, to comply with that act. Part of that act states, I quote "Require compliance with state standards for public health and safety, environmental protection, and siting construction operation and maintenance of right-of-ways."

Now, why isn't the BLM and the Forest Service setting this down as a condition for the right-of-way, that the BPA comply with Montana Power -- or, excuse me, the Montana Facility Siting Act? I think that's necessary. (Paul B. Smith, DSC-81-T2-44)

Comment: If there is a decision that it is the best interests of the United States of America and the State of Montana to build these lines, it is my opinion that the Montana State Facilities Siting Act should be followed so that all citizens of the state can determine and weigh all factors; which areas they wish to preserve for their use and benefit and which areas they will allow to be sacrificed to create these corridors. (Stuart Lewin, DSC-81-T2-59)

Comment: Why do the federal agencies involved in this project feel that they are not required to register under the major, State Major Facility Siting Act,... (Martin Dippold, DSC-81-T1-16)

Comment: It's the fear that the power line can condemn our property and use the right of eminent domain to go right through the middle of the valley....this is a gross abuse of the authority that our lawmakers gave the public utilities many years ago, and I think that if they take the choice of abusing this power,...this gives the Bonneville Power Administration the authority to take anything that you have with the exception of your life. (Ronald Kelly, DSC-81-T1-72)

Response: BPA abides by the language of the U.S. Constitution, which provides that the Federal Government is not subject to regulation or control by State government unless the U.S. Congress waives Federal supremacy in a clear and unambiguous manner. Since Congress has not waived supremacy in the areas of land use planning or facility siting, the Federal agencies are not subject to the jurisdiction of the State of Montana or the State of Montana Major Facility Siting Act. The Federal agencies are required under the Federal Land Policy and Management Act to comply "to the fullest extent practicable" with State and local standards enacted to protect the environment. This EIS supplement contains the information needed to conclude that the Federal agencies are acting consistently with these standards.

The above comments are suggesting that the Federal agencies are violating the provisions of the Federal Land Policy and Management Act (FLPMA) by failing to comply with State and local procedures. The Federal agencies are not required to comply with State procedures, but do intend to comply with State and local standards.

Comment: Is this corridor being considered to integrate power from Montana Power Company's Resource '89 facility at Great Falls or the Alberta Export Power Project? If not, what corridors are under consideration for those transmission lines? (Philip Barrett, DSC-81-L39-12)

Comment: There is also no mention of any implications perhaps of the Proposed Project 89's involved. (Rick Lacey, DSC-81-T1-122)

Response: If the proposed Resource 89 additions are located in the Great Falls area, reinforcement may be required between Great Falls and Garrison. This reinforcement could be provided by one or two additional 230-kV lines. The State of Montana will determine the location of these lines since the action would be initiated by a private company.

Most of the power output from generator additions in the Great Falls area would probably be consumed locally. If some of this power were transmitted to Garrison at 230-kV, it would tend to reduce the power from Colstrip through the 500/230-kV transformer. This would increase the east-to-west power transfer over the 500-kV circuits.

There are no plans now under study for integration of the Alberta Export Power Project (AEPP).

Any future corridor plans will be addressed as a part of the west-wide corridor planning effort chartered by FLPMA and being organized by BLM and USFS.

Comment: The survey of the centerline from Townsend to Garrison is another example of the preselection problem. The decision was made

before the process was completed. NEPA requires an unbiased choice among alternatives. Careful phrasing of words cannot conceal the fact that BPA has reached a decision on the centerline. Studies done subsequent to this selection will be interpreted to support the centerline location. (Robert L. Deschamps, III, Missoula County Attorney, DSC-81-L34-6)

Comment: When trees are cut down, stakes are driven for miles, thousands of dollars are spent on manpower, aircraft, and vehicle use, how can BPA have the audacity to call this line proposed? It's past a proposed stage already. (Sam Samson, DSC-81-T2-35)

Comment: You state "Even though centerline surveys have begun, they will not be finished prior to a decision on whether to amend the corridor. Following that decision on whether to amend the corridor a centerline environmental analysis will be completed."...If what you say here is correct, everything that we have seen so far points to the opposite. It seems as though you have decided what the corridor is going to be; and, therefore, our comments that we're making here are really not relevant, because you're not listening to them, and as a result are a denial of our due process.

...We think that you have selected several possible alternatives simply to make it look good. (Stuart Lewin, DSC-81-T2-66)

Comment: This is an example of the federal agencies' pattern of decision making. That is, the decision is made before completion of procedures that are required by law to precede the decision. The results of the subsequent studies are molded to support the decision already made. (Robert L. Deschamps, III, DSC-81-L34-5)

Comment: This "accord" was reached prior to the conclusion of full public participation in the review process and prior to the expiration of the time in which your agency is required to take note of public comment. This action constitutes not only a violation of the express provisions of NEPA, and the implementing federal regulations, but also of our rights to due process of law under the Fifth Amendment of the United States Constitution. We note that your agency is obviously bound to pre-determined position, as it appears that you have allowed BPA project engineers to already stake and lay out their proposed corridor and access routes on the federal lands. (Richard J. Llewellyn, DSC-81-L43)

Response: The significance of maintaining the schedule of this proposed project is related in the Summary and Purpose and Need sections of this Supplement. In order to keep the proposed project on schedule, it was necessary that tower steel, conductors, and substation equipment be specified and ordered well in advance of the start of construction. This does not commit BPA to a specific centerline. Most of the tower steel and conductor ordered can still be used irrespective of the corridor

selected, due to the flexibility of lattice steel tower designs. Substation equipment can be used irrespective of site. BPA management realizes that the environmental analysis and the analysis of public comments may indicate an alternative which is better environmentally and more publicly acceptable. If that is the case, BPA management is willing to survey a different proposed corridor.

The decision on a corridor proposal is a joint responsibility of BLM, USFS, and BPA. It is the intent of all three agencies to comply with the National Environmental Policy Act and to propose a new corridor only if it is more acceptable to the public and has lower impacts than the proposed designated corridor. The three agencies have completed an analysis of the public comments which will be considered in the decisionmaking process. This content analysis, as well as the interagency study team's environmental analysis, will be presented to the three agency decisionmakers for decisionmaking and documentation in the Record of Decision. The alternative corridors evaluated in the EIS reflect all that were identified by either BPA, BLM, the Forest Service, or the public.

Comment: It appears that the route eventually chosen by the Federal land managers in their original Record of Decision on the Colstrip-Bell transmission line route was selected prior to the preparation of the Colstrip EIS, presumably to make use of BPA's vacant right-of-way adjacent to its existing 230-kV line.

Only that could explain how the federal and state (in MFSA Certification) analyses chose different corridor routes. It appears that the BPA is making long range resource commitments based on the short term expediency of already holding transmission line easements. (Philip Barrett, DSC-81-L39-8)

Response: The policy guidelines established by the Federal Land Policy and Management Act and BPA's policy to use existing right-of-way whenever possible to reduce the proliferation of rights-of-way and reduce environmental impacts were important considerations in the corridor analysis and decision process. The fact that BPA owned a right-of-way was not considered in the environmental analysis. However, the paralleling of an established transmission right-of-way was.

Comment: We have had surveyors come on our property. We have had some confrontations between surveyors and landowners because no permission was asked. (Rick Lacey, DSC-81-T1-118)

Response: BPA acquired permission to survey, written or verbal, from approximately 200 landowners along the various routes. Every effort was made to contact each owner who could be affected by surveying operations, including the owners along existing BPA right-of-way. BPA has the right of ingress and egress within its right-of-way.

Comment: Why do all of the studied and preferred corridors exclude maximum use of public lands, both state and federal, in favor of private holdings? (Martin Dippold, DSC-81-T1-2)

Comment: We propose that insofar as possible consideration be given to routes that stay on public lands and on lands of low productivity. (Leonard Eliason, DSC-81-T1-34)

Comment: A public project like this, built and run by a public agency like the BPA, belongs as much as possible on public land. (Paul Burdett, DSC-81-T1-84)

Comment: Why do all of the studied and preferred corridors exclude maximum use of public lands, both state and federal, in favor of private holdings? (David and Dorothy Dutton, DSC-81-T1L16-1)

Comment: When the Bonneville Power was looking for alternative routes, it looks like they went out of their way to stay on private land. We feel they should be made to stay on Federal and State Land whenever possible. (John and Carole Hollenback, DSC-81-T1-L4)

Comment: I am opposed to the power line and substation being built near homes. The line as proposed would be in close proximity to a number of families.

No one, I'm sure, is trying to stop the line from coming through the state, but what is wrong with it being placed on Forest Service land, well away from homes? (Ivan Johnston, DSC-81-T1-L6)

Comment: We're sure that an alternate route could be selected that would keep it away from residential areas and private property.

We realize that the power line is important but we're sure that there is a lot of unpopulated government land that could and should be used rather than residential areas and private property. (Norman Williams, DSC-81-T1L10)

Comment: The routing goes skirting public property to go on private property because it's much easier for them to condemn private property than it is to go through the red tape of getting onto the public property. (Ronald Kelley, DSC-81-T1-73)

Response: As a matter of policy, the Federal land managers do not steer such projects to or from public land. Federal lands are managed on a "good neighbor" premise. After proper environmental and jurisdictional consideration, a decision is made which most equitably serves the total public interest. It is not possible to locate a corridor from Townsend to Garrison without crossing some private holdings because the proposed

transmission line is to be constructed east to west while the mountains and valleys are oriented north to south. Nearly all of the State and Federal lands are located in the mountains and foothills. Private holdings are located primarily in the valleys. The proposed corridor contains Federally-owned land on 1/3 to 1/2 of the total route mileage.

The corridor designated in the Record of Decision dated September 21, 1979, contains the greatest amount of State and Federal lands in the Deer Lodge Valley of any of the alternatives.

In an effort to address the public issues of avoiding irrigated lands in the Deer Lodge Valley, and skirting the Deer Lodge Valley, more private land was crossed by the alternate corridors than the Designated Corridor. The Black Mountain and Thunderbolt Alternatives were located to avoid the irrigated lands.

The acquisition of right-of-way from Federal agencies is fully defined in Memoranda of Understanding between the various agencies. While the process of acquiring rights-of-way across Federal lands is not simple, it is less expensive than acquiring rights across private property.

Comment: Are corridors best located in our river valleys where the most direct impacts on the human environment can be expected? (Philip Barrett, DSC-81-L39-11)

Response: Corridors are best located where adverse effects upon the quality of the human environment are avoided or minimized. The decision on whether a river valley corridor is better than a mountain corridor would be made only after an assessment, under NEPA and the CEQ regulations, of the relative effects.

Comment: As pointed out in our comments of January 31, 1979, it is highly probable that the accepted alternative will be subject to Federal Aviation Regulations Part 77, necessitating submission of Federal Aviation Administration Form 7460-1. (FAA, Colorado, DSC-81-L45)

Response: BPA will comply with F.A.R. Part 77 and work with the appropriate FAA office. For any part of the transmission line that does not comply with F.A.R. Part 77, BPA will submit Form 7460-1.

Comment: We share the concern for the possibility of electrical and biological effects described in Appendix C of the Supplement. However, current "state-of-the-art" research would indicate the electrical and magnetic fields do not create serious problems. However, it would seem prudent to discourage future human habitation and extensive human activities in the vicinity of exceptionally large transmission lines. (Department of Health and Human Services, Denver, DSC-81-L33-1)

Response: BPA normally tries to avoid location of facilities near human habitation and human activities in order to minimize visual impacts, disruption of land use, and other adverse impacts. However, we have no control over land use adjacent to rights-of-way once they are established. Counties control land use through established zoning and planning practices.

Comment: The double-circuit 500-kV line is being built for Units 3 and 4. Energization for commercial purposes is presently scheduled as January 1984 for Unit 3 and July 1985 for Unit 4. One of the 500-kV lines is needed to carry generation and the other is needed for reliability purposes. These facts should be clearly stated. (Leo Berry, DNRC, Montana, DSC-81-L32-10)

Response: You are correct. Montana Power Company's letter contained in Appendix G explains this distinction.

Comment: We feel that the dealing with a supplemental EIS statement and having to comment on it before we have really got into a long discussion of whether the corridor ought to be put through here entirely is one of our major problems, and we've indicated that throughout our discussions with you. We indicated to you that we do not want the line here through this valley. We've tried to make it clear. The supplemental EIS has not directed any attention to that. (Stuart Lewin, DSC-81-T2-52)

Comment: Why does an agency of the federal government push a project through an area which almost a hundred percent of the people are against it? I've heard nobody for this yet in this hearing or any other hearing I've been to. (Sam Samson, DSC-81-T2-37)

Response: Alternative transmission corridors bypassing the Boulder Valley were considered in the original Colstrip Project EIS. On the basis of that EIS, which included extensive notice and opportunity to comment, the decision was made to reject other alternatives and select a corridor near Boulder.

The question of need has also been answered. The Colstrip Project and transmission line must be located and built. BPA, USFS, and BLM are carrying out their role and delegated responsibilities in identifying a corridor and centerline. In the supplemental analysis an attempt is being made to determine whether there is a corridor alternative which would better mitigate the adverse effects of the transmission line and be more acceptable to the public.

Comment: To determine the saturation level of a corridor it is important to know how many lines could go out of service in an accident without bringing down the entire intertied Northwest electrical grid system. The

number of lines that can go down without causing a catastrophic failure probably should not be exceeded in a single corridor. (Philip Barrett, DSC-81-L39-18)

Response: We certainly agree with this statement. The basic criteria used in the "2020 Study" assumed loss of one complete corridor. BPA Reliability Criteria and Standards state that "the loss of all lines through one pass or one right-of-way shall not cause regional separation. The area served by these lines may be separated. Load and generation must be brought into balance by generator dropping, load shedding or load tripping. In some cases, the loss of some interregional ties may result."

Comment: We suggest that measures be taken to protect the travelling public....the permanent installation should be located in a manner to provide satisfactory vertical and lateral clearances to reduce hazard to over-height vehicles or to off-the-road type accidents. (Federal Highway Administration, DSC-81-L27-2)

Response: Measures to protect the travelling public are a required consideration in line location and construction.

In Part 10, Chapter 1, Section 4 of BPA's Transmission Engineering Standard Construction Specifications, safety measures at roads, highways, and railroads are discussed. These measures include guard structures, signs, and lights.

Towers are located outside the edge of the road rights-of-way. Vertical clearances over roads, highways, and railroads are governed by the National Electrical Safety Code, Seventh Edition. For this 500-kV line, the minimum clearance is 52.5 feet at maximum final sag.

Comment: I won't give my support to a powerline moving electricity west to Washington when they're going to "tube" oil east to Minnesota and the Dakota's. (Arnold Rieder, DSC-81-L35-7)

Comment: Then I read about the Northern Tier Pipeline moving energy the other way through all these same states costing billions of dollars. Use the oil for energy on the west coast. (Arnold Rieder, DSC-81-T2-26)

Response: The use of oil for generation of electricity would not be consistent with the President's stated goal of reducing dependence on oil, and conversion of oil-fired electric generators to the use of coal wherever possible. The scope of this EIS supplement is limited to consideration of alternative corridor locations.

Comment: Under issues identified during scoping, the following are listed but not addressed in the Draft Supplement: cost to taxpayers. (Leo Berry, DSC-81-L32-7)

Response: This issue is discussed in Section I of the Final EIS Supplement.

Comment: When planning their AAA route, BPA made a definite turn in their line to leave state ground and come into our private property in section 19. We have a map attached to show that they could have stayed on state ground if they had just gone in a straight line. (Francis and Linda Hogan, DSC-81-T1L8)

Response: The map accompanying this comment shows a line location which was preliminary. This map was used as a basis for indicating to property owners the area being considered for the transmission line before any field location work was done. The final location proposed was based on such factors as finding a suitable crossing of Rock Creek; avoiding irrigated agricultural land; crossing state land and several BLM parcels; and finding suitable sites to cross over the Montana Power Company transmission lines.

Overall, the final tangent (straight line) into the Gold Creek site for Garrison Substation extends from the northeast quarter of Section 29 (state land) to the substation site on the north part of the section line between Sections 21 and 22. Considering the previously mentioned factors, the proposed location makes the best use of state and BLM land while attempting to keep private lands crossed to a minimum.

II. ENVIRONMENTAL PROCESS

Comment: Any division of the Colstrip-Bell transmission line project for environmental analysis must be arbitrary as each terminus point predetermines the terminus point of the adjacent segment. This severely limits the range of alternatives that can be evaluated and makes evaluation of the cumulative impacts of all the segments impossible. I find both of these consequences unacceptable. (Philip Barrett, DSC-81-L39-7)

Response: A decision on the transmission system from Garrison to Spokane must consider factors other than just providing for integration of Colstrip power. It must provide for: (1) system reliability; (2) the integration and subsequent changes in power flows resulting from other sources of generation which have entered the system; and (3) new loads that may have entered or have been removed from the system. It is unreasonable to assume that such a system cannot be segmented for effective decisionmaking. At the time the original Hot Springs-Bell EIS

was initiated, a major consideration was integration of Libby power. Decisions on the integration of Libby, however, had to consider also the needs for reinforcement of Northern Idaho loads. The timing of these decisions did not coincide. As a result, the decision on integrating Libby and reinforcing Northern Idaho had to be made before the decision on the location and reinforcement of the Hot Springs-Bell system. Since then, the loads and subsequent need for reinforcing the Wallace-Kellogg area increased, which again has changed the requirements for the Hot Springs-Bell project. Without isolating the system into reasonable segments based on requirements that are "ripe" for decision, the logical planning of the Bonneville transmission system could never take place under the requirements of the National Environmental Policy Act as you interpret them.

Comment: BPA does not show how they plan to leave Gold Creek with any of these routes. Every line shown in the EIS stops at a substation in Gold Creek. (Francis and Linda Hogan, DSC-81-T1-L8)

Comment: In fact, I believe EPA requires that it should not have a segmentation of the EIS statement. And that's what they're doing. They're segmenting, "Okay, we'll look at your problems after we've already picked the corridor, and then we'll give Missoula and that area another opportunity." They do not believe, obviously, that if the EIS is deficient for the Missoula-Garrison area it must also be deficient for the Garrison to Townsend area. (Paul B. Smith, DSC-81-T2-41)

Comment: ...segmentation approach to acquiring the corridor, although we recognize that alternatives are a necessity in preparing such a project, appears to be a split-and-divide tactic on the part of the planners. ...are not prepared to present an exit route out of the district to continue the service west. (Martin Dippold, DSC-81-T1-10)

Comment: ...why is a power line and substation being brought into a populated area with no provision for how it will leave? (Judy Hogan, DSC-81-T1-36)

Comment: ...they moved in on this job, split it up into segments and starting laying down the law as to what was going to happen. (Paul Burdett, DSC-81-T1-82)

Comment: In the second place what possible reason can be given for segmenting the corridor as they have? (Paul Burdett, DSC-81-T1-85)

Comment: We find it hard to deal with segments in this total construction picture. (Melvin Beck, DSC-81-T1-62)

Comment: It is very important to us Gold Creek people and also to the Drummond, Hall people to know where the routes would go after leaving any given substation or segment. (Paul Burdett, DSC-81-T1-86)

Comment: First, we object to the segmentation of this EIS. (Rick Lacey, DSC-81-T1-113)

Comment: It is an improper segmentation under NEPA. The probable long range impacts of the proposed corridor, including the effects of probable additional future lines in the corridor, must be fully addressed. (Robert L. Deschamps III, Missoula County Attorney, DSC-81-L34-2)

Comment: I submit that this substation siting be held up until the right-of-way survey for the Garrison West to Hot Springs section is determined. (Elbe J. Brunette, DSC-81-T1-L11)

Response: The principal purpose of the Townsend-Garrison supplement is to reevaluate the selected corridor and substation sites to see whether there is an alternative with less environmental impact and greater public acceptance. The schedule for completion of the supplement and issuance of the Record of Decision is based on an energization date of October 1983 for Colstrip Unit 3. This will allow the output of Unit 3 to be integrated into the BPA transmission system which would be interconnected at the Garrison substation site. This decision must be made at least one year before any new decision from Garrison westward. Decisions on transmission locations and plan of service on the BPA system west of Garrison are tied to the schedule for energization of Colstrip Unit 4. It is true that the location of a substation will influence lines to the west. The possible ramifications of these locations have been summarized in the EIS for consideration by decisionmakers.

The functions, size, and line requirements of the substation are described on pages A-10 to A-11. In addition, the implications of delay and the effects of alternate sites on line locations to the west are described in the Alternatives Eliminated from Detailed Study and Garrison Substation sections in the Final Supplement.

Comment: BPA now plans to do supplemental or revised EIS's for the entire length of the line it is constructing from Townsend to Bell. This to me is strong evidence that the original environmental analysis used by the Federal land managers for their Record of Decision on the Colstrip Project corridor route was seriously flawed. For me the environmental desirability of this corridor has not been adequately established, and it should be restudied. Dividing the environmental analysis of this transmission line into segments obviates the possibility of addressing that question, a situation unacceptable to me. (Philip Barrett, DSC-81-L39-9)

Response: Any revisions of the original Colstrip Record of Decision will be made only if the new corridor has fewer impacts and is more publicly acceptable. The original Colstrip analysis and EIS remain a valid

interagency, interdisciplinary corridor analysis. Any revisions of the original Record of Decision will be for the purpose of improving upon the original decisions made.

Comment: The Draft EIS and the underlying Final EIS are violative of NEPA in that they fail to adequately study, develop and describe appropriate alternatives to your proposed course of action, which course of action involves unresolved conflicts concerning such alternatives and involves admitted adverse environmental effects which cannot be avoided and which are irreversible and irretrievable. In this regard, we specifically note the very limited alternatives which you do manage to propose. None of your alternative corridor routes have ever been acceptable to anyone I have talked to. (Richard J. Llewellyn, DSC-81-L43-9)

Response: The primary purpose of the supplement is to provide corridor location options for consideration in revision of the designated Townsend-Garrison corridor. Such revision will be made if a corridor that is more publicly acceptable and with less environmental impact is identified. Although it is probably true that no one in the Deer Lodge and Boulder areas wants a 500-kV transmission corridor on any location, the same can be said for any other alternative corridor locations considered in the Colstrip EIS. We do not consider 19 corridor location alternatives to be a limited number of alternatives.

The Federal agencies have determined that the alternatives presented in this supplement constitute a reasonable range of alternatives in light of the underlying need. There are no alternatives known to the Federal agencies that would do a better job of integrating Colstrip power while also having less adverse environmental impacts.

Comment: All of the proposed alternatives have significant adverse impacts upon wildlife, especially upon critical deer and elk winter range in the area between Basin and Garrison. Your failure to propose any other alternatives (such as the corridor previously approved by the Montana Board of Natural Resources, for the Montana Power Company proposal, pursuant to the Montana Major Facility Siting Act review) makes a mockery of NEPA and the Federal Land Policy and Management Act. (Richard J. Llewellyn, DSC-81-L43-12)

Comment: We also agree with your conclusion that the goal is to manage the vegetative cover to maintain and enhance wildlife and to protect the aesthetic qualities of this area.

That is the goal. We feel that putting the corridor through this area would not meet this goal and in fact would do just the opposite. It will

destroy the vegetative culture. It will destroy the wildlife, not enhance it. It will not protect the aesthetic qualities of the area. And we think that simply making a perfunctory statement that you think that the transmission line would conflict with this goal is not enough. We think that it needs to be weighted heavier in the decision-making process and that an alternate corridor be selected as a result. (Stuart Lewin, DSC-81-T2-82)

Response: Vegetative cover will be managed along the transmission line, and will be managed where possible to maintain and enhance wildlife. In some instances, clearings for the transmission lines will increase the amount of edge effect necessary for sustaining many species of wildlife.

The negative effect on esthetic qualities in the area will conflict with the goal of protecting the esthetic qualities of the county. The use of non-reflective conductor and darkened towers will help to reduce the esthetic impacts.

Consideration of another corridor, such as the one approved by the Montana Board of Natural Resources and Conservation, is not addressed in the Supplement. It was fully addressed and considered in the Colstrip Project EIS, and in the Record of Decision dated September 21, 1979.

Comment: When we talk about endangered species on 2.5, we do not feel that you very carefully considered all of the endangered species. You have only dealt with two of the endangered species. We see no reference to Snow Owls. I personally am aware of Snow Owls in the area. (Stuart Lewin, DSC-81-T2-80)

Comment: BPA has not done a thorough investigation of the wildlife habits. (Char Webb, DSC-81-T2L21)

Comment: Also, we note that you don't mention anything about the effect on birds. When you talk -- talk about birds I don't think you are dealing -- I don't think you even understand what kind of bird populations we have. I wonder whether that owls in the barn will come into the valley at all if it from way up on high sees your power lines. (Stuart Lewin, DSC-81-T2-74)

Response: A list of Federally-designated endangered species that may occur in the Colstrip project area was provided by the U.S. Fish and Wildlife Service, as required by the amended Endangered Species Act of 1973. These species (bald eagle and peregrine falcon) are covered in the Colstrip Project EIS, and in the Consultation, Review, and Permit Requirements Section of the Final EIS Supplement, as well as in a biological assessment prepared for the project.

The types of bird species and possible impacts likely to occur in the Colstrip project area were evaluated in the Draft and Final Colstrip Project EIS. The Snowy Owl is not Federally designated as a threatened or endangered species. The Snowy Owl appears in the project area during the winter months. Possible effects from the transmission line project would be disturbance from construction activities and increased collision potential.

Wildlife habits were also evaluated in the Draft and Final Colstrip Project EIS.

Comment: We also would like you to address in this particular provision of what will be the effect on the large bird populations that migrate through this area. We think that long-term studies need to be made of these bird migrations over several years so that we can determine exactly what those migrating birds are, the amount that come through here, and what effect your lines would have on it. (Stuart Lewin, DSC-81-T2-79)

Response: No significant impact is expected on the large bird populations that migrate through the area. Some collision mortality will occur, but studies have shown collision potential to be low (Meyer, 1978; James and Haak, 1979). The primary reaction of birds to transmission lines is to increase their flight altitude. There is no evidence that birds will avoid areas crossed by transmission lines. However, short-term displacement can be expected during construction due to disturbance.

No long-term studies have been proposed for the Colstrip transmission line to determine what effect it will have on migrating birds. Bonneville Power Administration, U.S. Fish and Wildlife Service, and Electric Power Research Institute presently have ongoing studies on this subject in other geographical areas.

Comment: Turning to page 2.2, we seriously doubt whether a one-year study would be satisfactory to determine what the effect would be on the elk and deer populations in this area.

On the bottom of the page you talk about the impact to the key elk and deer ranges would be high. We are in agreement that they would be extremely high. We think that you'd need to go into this in greater detail. (Stuart Lewin, DSC-81-T2-71)

Response: The study you refer to for determining the effects of the transmission line on elk and deer populations would require more than one year. At least a year is required for gathering baseline data before clearing and construction activities. The study would continue during and

for some time after construction. For additional discussion, see the Wildlife Section in the evaluation of the Designated Corridor, Boulder Area.

Comment: In registering this property, we felt that it was -- that the value of the Hot Springs was not just in the hotel itself and in the acreage itself but in its location in the valley and the view.

The view, therefore, from the veranda of the hotel was named specifically in the registration as being essential to the -- to the historical nature of the hotel, and we feel that building these transmission lines, if they would affect the view, will adversely impact this National Registry property and that this must be considered in the environmental impact statement.

But beyond that, the area is basically the same as it was in the past, and we think it is a unique resource for this reason and should be preserved. We also feel, as I said, that the supplemental EIS statement and the original EIS statement did not discuss the unique nature of this particular resource and of the valley itself.

"Impacts to historical and archeological sites." As I indicated to you, no place in the supplemental EIS statement and the initial EIS statement has the view from the veranda on the hotel been considered, has the entire unique nature of the Boulder valley been considered as a historic site. You did make some side reference to the fact that there would be a negative impact on the historic districts of the town of Boulder itself. This needs to be expanded and considered carefully. You're missing information here. We would like you to find it out and put it into your figures. (Stuart Lewin, DSC-81-T2-61)

Comment: If there are cultural resource surveys being undertaken on the centerline survey, they should be described. (Leo Berry, DSC-81-L32-2)

Comment: Your analysis is grossly deficient as to the impacts upon historic sites in the area. This includes not only the "ghost towns" of Elkhorn and Comet, but also the Boulder Hot Springs (formerly the Diamond S Ranchotel). (Richard J. Llewellyn, DSC-81-L43-18)

Comment: Historically, there are many locations in the corridor which have significance.... Further consideration should be given to this heritage. (Martin Dippold, DSC-81-T1-14)

Response: Elkhorn, Fraternity Hall, the Boulder Historic District, the Jefferson County Courthouse, Wickes Historic District, Wickes (itself), Comet, Basin, the Hot Springs, and numerous other sites were considered when analyzing impacts. The methodology considered visual impacts and

site density within a six-mile swath on either side of the reference line in the corridor. The results of the analysis are shown in the prehistoric and historic impact ratings map, Appendix E of the supplement. Historic impacts are also "counted" in Table 1 and Table 2, item number 8.

Pioneer and the Gold Creek Historic District, though not Federal Register sites, were included in the Prehistoric/Historic resources impact ratings.

Impacts on known Federal Register sites is also a major environmental consideration (number 8) in Table 5, as Federal Register sites are one of fifteen criteria relevant to the decisionmaker.

BPA's landscape architect evaluated visual impacts from the Jefferson County Courthouse in Boulder and the Boulder-Hot Springs Hotel. From the second and third floors of the Courthouse the line could potentially be viewed, but only with great difficulty. From the Boulder-Hot Springs Hotel, the transmission line would be viewed four to six miles away within the viewshed of the Elkhorn Mountains. The view would be against a background of varied color and textured patterns. BPA proposes to use non-specular conductors and to treat the towers. This should allow the background to absorb the line at these distances. Visual impacts to the casual viewer should be low.

Qualified archeologist/historian(s) will conduct a survey of the project area before construction begins to determine whether any previously unknown sites are present and to determine the impacts on existing sites. If the survey identifies any historic or archeological site which will be affected by the proposal and which also meets the National Register criteria, an eligibility determination request will be made of the Secretary of the Interior. BPA will consult with the SHPO and the Advisory Council on Historic Preservation on matters involving effect, adverse effect, and appropriate mitigation measures with respect to any National Register properties.

If any historic or archeological resource is encountered, BPA will comply with the guidelines and procedures of the Advisory Council (36 CFR, Part 800), the provisions of Section 106 of the National Historic Preservation Act (16 USC, Section 470f), Executive Order 11593 (May 13, 1977), and the National Environmental Policy Act (42 USC 4321-4327).

Comment: Page 2-4, 2-6, 2-7, 2-8, 2-9, 2-11, 3-7, 3-10, 3-11, 3-16, 3-18, 3-19, 3-21, 3-23, 3-24, 3-25, 3-26, and 3-28. On these pages, forest impacts are rated high or moderate depending upon whether the impacts are evaluated under plants or land use. The high impact rating is inappropriate since impact risk of losing forest cover in such a vast forested area is not significant, except possibly in some very localized (site specific) area. (Leo Berry, DSC-81-L32-4)

Response: Forest land, as well as rangeland and agricultural land, is considered twice in the numerical analysis methodology: as a data item in the vegetative cover determinant (listed under plants), and as a separate determinant (listed under land use).

As a data item under vegetative cover, all forest lands are lumped together regardless of species type or management. Forest land, regardless of forest type, was considered to be highly sensitive to transmission line impact. This rating was considered necessary in light of the stability that forest cover provides. To a high degree, forests are limited to mountainous and hilly terrain, where the preponderance of steep slopes, thin soils, and high precipitation zones occurs. Since trees are the major factor in maintaining the ecosystems of these areas, removing this vegetation to provide a power line right-of-way could have significant consequences.

Forest lands under the commercial forest land determinant were considered according to their productivity. All commercial forests in the study area are moderately productive and have a medium impact potential.

Comment: Another problem that was not, I don't believe, adequately addressed was the water problem. Of the nine corridors studied, the BPA route was the second highest in impact on surface water rights, or surface waters. The corridor that was approved by the Montana Facilities Siting Act, the Montana Power corridor, was the second lowest. (Paul B. Smith, DSC-81-T2-46)

Comment: ...the impact on surface waters here are extremely important, and we feel that unfortunately in your EIS statement you have not rated these highly enough. In fact, we would say that the nature of the mountains is extremely unique, that we in the Boulder valley are extremely dependent on water for our business and for our life, and that the impact here needs to be weighted heavier than you have it in the EIS statement. (Stuart Lewin, DSC-81-T2-76)

Comment: Your environmental impact analysis, in all cases, fails to adequately assess, consider and weight the impact of powerline construction and corridor maintenance on surface waters within the proposed corridor and the limited alternatives. We note that the proposed BPA route has the second highest total impacts on surface waters of all possible routes through the area. In contrast, the corridor route proposed by the Montana Power Company and approved by the Montana Board of Natural Resources has the second lowest total impacts. (Richard J. Llewellyn, DSC-81-L43-14)

Response: Surface water impacts are evaluated in Volume 1, Section 3.2-9 of the Colstrip Project EIS. Mitigation measures are stated in Chapter 2 of this supplement, and in the Colstrip Project EIS, Volume 1, Section

3.3 and Volume 2, Appendix A3.3.3. For a discussion of the weighting process used in the environmental analysis see response to comment on page 6-28.

Comment: ...appears to give more consideration to protection of the wild game population and pristine character of certain public lands than it does to the citizens who reside in the vicinity of the proposed corridor and substation. (Martin Dippold, DSC-81-T1-13)

Comment: With the tremendous amount of input into the EIS concerning the effect of a power line and substation on wildlife and forested areas, doesn't the quality of human life and our lifestyle deserve the same careful consideration? (Judy Hogan, DSC-81-T1-43)

Comment: In selecting the proposed substation site at Gold Creek more attention had been given to the effect on elk habitat than to the effect the site would have on the people of the area. (William and Susan Wohlers, DSC-81-T1L2)

Comment: In the EIS Statement, there seems to be more concern for the Fish and Wildlife than the people living in the area. They did more research on where the elk calve than they did on where the people live and what effect it will have on them. (John and Carole Hollenback, DSC-81-T1-L4)

Comment: The people who wrote the EIS are more concerned with the elk in this area than they are with the people. Wild animals can and will move if necessary. People cannot just leave their homes. (Francis and Linda J. Hogan, DSC-81-T1-L8)

Comment: The extraordinary amount of input into the EIS concerning the impact on game and other wildlife, while an important factor; we cannot help but wonder why impact on people and their lifestyle is not given the same careful consideration. (Gold Creek Homemakers Club, DSC-81-L31-3)

Response: The quality of human life and lifestyle does deserve the same careful consideration as wildlife and forested areas. In the EIS and the supplement, houses, homesteads and areas of concentrated human population were avoided to a greater extent than wildlife habitat and forested areas. The protection of wildlife populations and the pristine character of certain forest lands are, however, concerns in the management of public lands. As a result, every effort was made to avoid key wildlife ranges.

Comment: In the past year, even though Bonneville has generated a dozen alternative corridors, they have yet to consider the effects of this power line on our agricultural lifestyle as important as their own technical, economic and political concerns. Since there is not one

corridor presented for review in the draft supplements that doesn't impact agricultural lands the Deer Lodge Valley Resource Association stands in opposition to them all. (Toni Kelley, DSC-81-T1-103)

Response: The AA and AAA corridors were selected as alternatives because they did meet many of the issues identified by the people in the Deer Lodge Valley. The corridors were placed in the foothills, going around the valley. Irrigated lands were identified in the entire valley in an effort to locate a corridor that would avoid as much irrigated land as possible. The intent was to minimize as much as possible the effect on the agricultural lifestyle.

Comment: And actually that's one of the problems that most of these ranchers are having, that their range land is up under your lines, and they feel that's not being carefully enough considered. (Stuart Lewin, DSC-81-T2-86)

Comment: It is a disappointment to us that agricultural land, privately owned, has not received its just consideration in impact in the Supplemental EIS and the original. I consider this an inaccuracy in the Supplemental EIS and also accuse the writers of biased opinions. (Melvin Beck, DSC-81-T1-58)

Comment: If agricultural land had been given its accurate weight as a determinant in this study, it is possible that this power line never would have been sited even in this general area of Montana. (Melvin Beck, DSC-81-T1-61)

Response: The amount of farmland, irrigated and dryland, which would be crossed was an issue addressed in the draft EIS Supplement. Rangeland was also addressed in the Draft Supplement. Many alternate routes were proposed in an effort to reduce the number of miles of farmland which would be crossed. For further information, see Table 2 and Table 6. Also see the Land Use discussion for each alternative in the Environmental Consequences section of the Supplement.

The agricultural land determinant was given a medium weight in the numerical analysis methodology because, as a unit in the economic environment, the impact of a power corridor would be moderate. The amount of acreage taken out of production would be quite small (except during the construction phase), and increased farm management costs would not be great. Comparatively, this degree of impact would be intermediate or "moderate" in importance.

The Study Team used the responses of the state's public opinion surveys and its own professional judgment to assign determinant weights. Special attention was given to resource categories which the public considered to be important, although such public opinion of resource importance was

tempered by the team's evaluation of impact potential. The impact analysis was based on the assumption that construction techniques commonly used today would be used for the installation of the proposed power lines, including road access to the right-of-way so that ground equipment could be used in clearing, constructing towers, and stringing the conductors. (TER, page VI-9)

An agronomist from the Montana University System provided agricultural information and interpretation.

Comment: We also take exception to the amount of irrigated land involved in this corridor as stated in the Colstrip Project EIS. (William and Marilyn Murphy, DSC-81-T1-L7)

Response: The amount of irrigated land stated in the supplement is the amount of irrigated land contained within the 125-foot right-of-way. Not all the irrigated land within the two-mile wide corridor was included.

Comment: To not have included someone expert in agriculture and someone with experience in ownership of private land in studying the impact and writing the Colstrip EIS was a gross error we refuse to accept. (Melvin Beck, DSC-81-T1-59)

Response: An agronomist from Montana State University was a member of the Transmission Environmental Report interdisciplinary study team, which set up the methodologies used in this analysis. The interdisciplinary team for this supplement, which evaluated the various impacts of the alternatives, merely duplicated the same methodology. The team members were specialists in forestry, range, soils, recreation, and other resource-related fields. Impacts were determined without regard to type of land ownership.

Comment: Turning to page 2.3, the third paragraph, it is stated, "The transmission line would allow the rural nature of the area to continue. Some change would occur because of roads being built and the construction of the transmission line but would not be a drastic change from normal development of the area." We think this statement is inaccurate and unfounded. We think that this statement shows how perfunctory consideration has been made of the entire issue of land use through the Boulder valley and demonstrates itself the fact that the EIS statement is vague. (Stuart Lewin, DSC-81-T2-75)

Response: The transmission line will not stimulate urbanization or subdivision development in the general area. The basic rural atmosphere should remain unchanged. The transmission line essentially will not interfere with the normal developmental activities of the area.

Comment: If the EIS statement and the supplemental EIS statement is designed to determine exactly what the impacts are, then we feel that you people should not be writing those portions. Those portions should be written by independent parties. (Stuart Lewin, DSC-81-T2-69)

Response: Federal agencies are required by the National Environmental Policy Act to analyze the environmental impacts of any major action on Federal and other lands. The draft supplement to the Colstrip Project EIS was thus prepared by the Federal agencies directly involved. This document was prepared after consultation with numerous individuals and organizations. Federal agencies normally prepare their own EIS's. Objectivity in the EIS is assured by employing professional staff and circulating draft EIS's for review by outside agencies and other interested persons.

Comment: In the first place, why should the BLM be the one to write the EIS? (Paul Burdett, DSC-81-T1-83)

Response: A Department of Interior agency, the U.S. Geological Survey, was the lead agency on the original Colstrip Project EIS. The BLM, BPA, and FS agreed that it was most practicable to keep the lead agency designation in Interior, with the BLM, for greater efficiency in filing the required documents with the Council on Environmental Quality. Actual lead for preparation of the Supplement will be with BPA.

Comment: Tables 1 and 4. These tables are unclear. Route comparisons done in this fashion are of little meaning in the context of an EIS. Comparing or rating the routes by relative value in resource areas could be presented in tabular form and would be much more meaningful to the public. (Leo Berry, DNRC, State of Montana, DSC-81-L32-5)

Response: Tables 1 and 4 (now 2 and 7) were derived from the numerical analysis methodology used in the Transmission Environmental Report (TER) and Colstrip Project EIS. See the methods discussions in Chapters 2 and 3, and particularly Table 7 for such comparison. See also Appendix F in the Supplement, or refer to the TER or EIS.

Comment: We find it impossible to comment on any of the charts because the information contained in the EIS statement is incomplete.

If you want a full public comment, we need to see all of the information that went into those charts so that we can determine whether or not we would agree with those findings and if we would disagree with the findings to indicate that.

How can we comment on whether or not the Ovando area is blue and the Boulder Hot Springs area is a lighter green unless we know exactly what facts you used to make that determination?

If we know the facts you used to make that determination, we can then properly comment about whether we would agree or not as that being correct. (Stuart Lewin, DSC-81-T2-84)

Response: All of the necessary maps and the various methodologies for each determinant are contained in the Colstrip Project Transmission Environmental Report (TER) and the Colstrip Project EIS. Copies of the TER are available upon request.

Comment: The status of the valley, Flint Creek Valley and the scenic consideration section, we also oppose. We vigorously oppose the classification of Flint Creek Valley as minimal.

The Flint Creek Valley has been designated as parts of Montana Scenic Valley System. The power line route that has been proposed for this valley would go right over the initial section of the Pintlar Scenic Route and can be seen from that route for miles. (Rick Lacey, DSC-81-T1-123)

Response: The Flint Creek Valley was discussed in the Colstrip Project EIS and is not within the scope of this EIS supplement.

The draft Garrison-Spokane EIS, scheduled to be issued in the fall of 1981, will include an analysis of the Flint Creek Valley. The designation of the Flint Creek Valley has been reevaluated and upgraded in that EIS.

Comment: On page i of the Draft Supplement, ten public issues and agency concerns are listed. They resulted from meetings to allow public participation in the decision making process. These issues are not addressed in the draft supplement. Instead of answering the public's questions the BPA has chosen five other issues to be resolved in the supplement. The BPA has solicited public concerns and questions but has failed to include discussions of them in the EIS. The BPA should address all ten issues and answer the public's questions in good faith. (Robert L. Deschamps III, Missoula County Attorney, DSC-81-L34-7)

Response: Major public issues and agency concerns are listed in the Summary (page i) and Introduction (page 1-3) to the Colstrip EIS Supplement.

The "five other issues" on page ii which you referred to are the objectives of the supplement. One of the objectives was to consider public input, specifically the 13 major issues listed on page 1-3. All 13 major issues have been addressed in the Draft Supplement and in the responses to comments.

Comment: BPA has not shown a fair description of the situation here in its reports, showing no emphasis toward the people's negative opinions/feelings even showing grossly inaccurate reports of the people's ideas/feelings. (Char Webb, DSC-81-T2-L21)

Response: The purpose of the public involvement process was to take into consideration the public's feelings and concerns. Results of the process are reflected in this comment-response section and in the content analysis of public comments completed by the Interagency Study Team. The analysis will be considered in the final corridor decision.

Comment: Page 1-8. The interconnections of the MPC and BPA 230-kV transmission lines with the substation are referred to in this paragraph, but never discussed in the text of the report. Because the 230-kV lines were such a factor in discounting this particular substation site, the 230-kV lines need to be addressed in the Supplement. (USDA Forest Service, Regional Forester, Missoula, DSC-81-L41-2)

Response: The substation sites studied in conjunction with the Draft Supplement were located adjacent to the existing 230-kV transmission lines, making it unnecessary to address the environmental effect of these lines. Now that substation sites are being considered away from the existing 230-kV lines, the environmental effects of interconnection with these lines must be evaluated. Additional 230-kV line requirements are discussed in Chapter 4. Since these lines would parallel BPA's existing 230-kV transmission line within the Designated Corridor, the environmental impacts, would be essentially the same as those addressed in the Supplement for the 500-kV transmission line.

Comment: What guarantees of the following....That there will be any change at all in position of corridor. (Debbie Sheehan, DSC-81-T2L20)

Response: The alternative corridors identified in the Supplement cannot be significantly modified. However, the centerline within those corridors can be moved to mitigate impacts and inconveniences to individual landowners.

Comment: The advantages and disadvantages of paralleling existing linear facilities should be discussed if this has any bearing on the final route decision. If paralleling is considered to have no effect on the decision this should be stated. (Leo Berry, DSC-81-L32-1)

Response: Paralleling of existing power lines/utility corridors is listed as a Developmental and Jurisdictional Criterion and will be a decision factor.

Paralleling reduces the land use impact through sharing parts of the existing right-of-way between the existing and new lines. The advantages of paralleling are discussed in the TER (Chapter 5, pages 3-7).

Comment: BPA will use this right-of-way for future larger lines, without any need for investigations/reports. (Char Webb, DSC-81-T2L21)

Response: Any future projects which BPA constructs are subject to the requirements of the National Environmental Policy Act. Decisions to build along this corridor would be subject to detailed study, public input, and an EIS prior to decisionmaking. Certainly the knowledge and experience gained by such a project as this should be used to the extent possible for future similar efforts. Such is in the interest of efficiency--savings in manpower and in money.

Comment: We wish to call your attention to paragraph 3, page 3-10, Colstrip Project EIS, "Residential". This statement is completely false. Sixteen residences would be directly affected in the irrigated crop land area, and more in the two mile corridor, if the above-mentioned centerline were chosen in the Designated Corridor. (Mrs. Lou C. Kelson, Carl A. Johnson, DSC-81-L37-3)

Response: Your figure of 16 residences within the irrigated cropland area of the two-mile wide corridor is correct. That the people residing in the area would be affected may be correct, if they object to any transmission line in the area.

The centerline would be adjusted to avoid passing directly over any residence. In this way, the residences would not be directly affected, though they could sustain visual effects.

Comment: The Colstrip EIS presents erroneous figures on population and residence distribution.... (Martin Dippold, DSC-81-T1-12)

Comment: Chapter seven of the EIS draft report states that substation number three will have two homes within a one-fourth mile radius and on page 5-6 according to the EIS population figure Gold Creek has 35 residents. This information is incorrect. (Jan Wohlers, DSC-81-T1-19)

Comment: We are also amazed at the population figures and number of residences impacted as stated in the EIS. One brief drive through the valley would show how much in error these figures are. (Judy Hogan, DSC-81-T1-38)

Comment: The EIS states there are only 35 people in Gold Creek. There are almost 35 families and well over 100 people. (Francis and Linda Hogan, DSC-81-T1-68)

Response: Population and residence figures were taken from state highway maps and 1970 census data. The 1980 census information is not available for unincorporated areas of less than 1000 people. Earliest projected dates of that availability are late summer or early fall (as verified by the Bureau of Census, Denver, Colorado, the Montana State Data Center, and the Planning and Research Bureau, Montana Department of Highways). We appreciate your interest and will accept your population figures for the Gold Creek area. There are two residences within one-quarter mile of the Gold Creek Substation Site.

Comment: Tables 1 and 4, Comparison of Alternates. Terminology should be checked for clarity. In the text, various items are discussed under Land Use. The term "Land Management Plans" is used in the tables, but not in the text. This should be clarified to avoid terminology problems, or added as another item in the text. (Thomas Coston, DSC-81-L41-4)

Response: The discussion in the text under Land Use identifies how the corridor would affect present land use in that area. Land management plans refer to county land use plans or a plan of similar nature. Land use plans are discussed in the text of the supplemental EIS on pages 2-5, 3-5, and 3-6.

Comment: Page B-7, Animals. Wasn't a grizzly killed in this location in early 1980? (Thomas Coston, DSC-81-L41-6)

Response: Yes, you are correct. On page 3-8, under the Threatened and Endangered Species section, it is stated that "A grizzly bear was killed within the Designated Corridor, on the west side of the Continental Divide, in May of 1980." The information in the text will be changed to reflect your comment.

Comment: Page 1-5, bottom of page. Item 2 - Length of the corridor should not be listed as one of the criteria. (USDA Forest Service, Regional Forester, DSC-81-L41-1)

Response: We concur in your conclusion that length of line should not be shown as a separate item in Project Development and Jurisdictional Criteria. The item will be deleted.

Comment: Figure titled: UNIQUE NATURAL RESOURCES IMPACT RATINGS. Are the colors on the map correct? (USDA Forest Service, Regional Forester, DSC-81-L41-5)

Response: The colors on the map for Unique Natural Resources and Impact Ratings do not coincide completely with the colors used on adjacent maps. Colors are keyed for that map.

Comment: Tables 3 and 6, Corridor Evaluation Summary. Item 1 - Cost of Construction. It may help to clarify the comparison of cost with one of the circle indicators, as an indication of weight given to this item. Item 5 - Estimated Costs of Electrical Losses. Estimated dollar figures in addition to the circle indicators would help in clarifying the differences in the three corridors. (USDA Forest Service, Regional Forester, Missoula, DSC-81-L41-7)

Response: Circle indicators have been deleted from all tables. Dollar figures have been added, as you suggest.

Comment: Point number one on the bottom of the page talks about the electric and magnetic effects of transmission lines addressed in Appendix C. We indicated to you at an earlier meeting that we do not believe your studies, that we do not want to be guinea pigs here, and what we feel is necessary is that moneys be provided by the federal government for independent studies made by us. We feel that we should be given as much money as you are given to put these studies together, by the same people, in order for us to try and protect our case as to the fact that the transmission lines would be dangerous to the health of ourselves and to our families and to our children. (Stuart Lewin, DSC-81-T2-68)

Response: Scientific studies of electrical and biological effects are being conducted in laboratory-controlled settings by some of the foremost researchers in the United States and Europe to determine what, if any, effects may result from exposure. Centerlines within the corridors can be located to avoid prolonged electromagnetic field exposures. The field strength levels are designed so that at the edge of the right-of-way they are far below the levels which have been determined to have any potential for adverse effects; field strength levels would be below the exposures received in watching a color TV or using a microwave oven. Scientific studies conducted in the field would not be conclusive since they are influenced by many uncontrollable variables. With these studies already being conducted, the funding of duplicative studies is not justified.

Comment: On page A-2 blatant misrepresentation of size of towers in your artist's rendition. They are almost the same size as the trees in the picture. (Debbie Sheehan, DSC-81-T2L20)

Response: No misrepresentation intended. The drawing is designed to show how the right-of-way would look after clearing, i.e., not an even-edged swath but a partially cleared area with feathered edges. Please note that the tower furthest back appears many times the tree height. Only the closest tower may have a distorted perspective. Towers in the study area will be two to three times as tall as the surrounding forest canopy. The illustration has been revised.

Comment: Another specific objection in the area of the aesthetic evaluation is the fact that equal weight has been given to visual impact by people passing on Interstate 90 with who might be in view of the land for at most a couple of minutes as opposed to people who have to live and look at it through their window for the rest of the time they occupy their homes. This is erroneous and in fact patently foolish. (Todd Mowbray, DSC-81-T1-149)

Response: The visual impacts rating is composed of three factors: variety classes, which are determined by the physical features of the land; sensitivity levels, or people's concern for scenic quality; and visual quality objectives or the degree of acceptable alteration of the landscape, which is a combination of the previous two factors.

According to the methodology for determining visual sensitivity outlined in the TER Appendix A, page A-4.3, "Land uses dependent on natural settings, high volume traffic routes, and urban and suburban areas" were assigned to sensitivity level one, the level just below that assigned to Wilderness, Roadless, Primitive, or Proposed Wilderness Areas.

No distinction was made between high-use volume areas or long-use duration areas. The residents of the Boulder Valley may be assumed to be members of each classification.

Comment: Second, I believe that the entire process that has gone on here is a denial of my due process. It has a constitutional effect on my life, liberty, and the pursuit of my happiness without the due process of the law, and that the procedure, the EIS, and everything involved in the process that has taken place is that denial. (Stuart Lewin, DSC-81-T2-50)

Comment: Your proposed action, and the manner in which you have arrived at the same, have deprived us of our right to due process of law under the Fifth Amendment of the Constitution of the United States, in that you have intentionally conducted the process so as to deprive us of our opportunity to comment and participate in the decision-making process in its original (and most important) stages. (Richard J. Llewellyn, DSC-81-L43-7)

Response: The contrary is true. The Federal agencies have gone through an extensive NEPA process which includes notice, the opportunity to comment, and consideration of those comments before decisions are made. See pages 6-1 through 6-3.

Comment: Table 3 -- Designated Corridor #6. The name of the group is the North Boulder Protective Association (not as shown in Table 3) (DNRC, DSC-81-L32-9)

Response: Typographical error corrected.

III. ENVIRONMENTAL CONSEQUENCES

Comment: The corridor that was selected (by the state) was different than the one that BPA selected, and I think that's important. And what's even more important is there's a difference in the structures.

Montana Power was constructing towers that were sixty to eighty-nine feet. The BPA is constructing towers that are a hundred seventy-five feet high. Montana Power's right-of-way was going to be three hundred feet. BPA's is a hundred twenty-five feet. Now, I think there's an important question to ask concerning the studies that were done here, environmental effect as far as the totals were concerned than the one the Montana Power had approved.

However, the big difference was in the impact through forest, commercial forest land. Now, when you shut that--or cut that right-of-way down from three hundred feet to a hundred and twenty-five feet, that's obviously going to make a difference in the forested land, and that was the cause of the big impact through the Townsend to Helena area. With that impact cut down, I believe it would have less of an environmental effect than the BPA selected route through Boulder. I think those things should be restudied and the evaluation done again because of the difference in the corridors. (Paul B. Smith, DSC-81-T2-45)

Response: This was discussed in the Colstrip Project EIS, Volume 1, pages 3.7-14 and 3.7-15/3.7-16.

Comment: This Draft Supplement abjectly fails to evaluate the impacts of the establishment of a new major transmission corridor.

The suitability of a corridor for future expansion (and especially the environmental consequences thereof) is obviously a factor that should be taken into consideration in choosing a corridor, but it must be documented. I see no evidence in this Draft Supplement that it has been considered.

Public policy on several basic questions regarding these transmission corridors needs to be discussed in a public forum and included in this EIS. Of the seven corridors identified in the "2020 study", will we open each with a first line before doubling up on any, or will we saturate the first corridor before opening the second? At what level will we consider each corridor saturated?

As regards future expansion, how many lines could we reasonably expect in this corridor in the future? What is the ultimate carrying capacity of this corridor? What constrains such capacity to that number of lines? (Philip Barrett, DSC-81-L39-10)

Comment: Another thing we would like to have is some sort of guarantee that there will not be more lines put through this same corridor,...
(Don Larson, DSC-81-T2-8)

Comment: ...who knows how many more lines on this corridor once it's been established and built? (Sam Samson, DSC-81-T2-30)

Response: This Supplement to the Colstrip EIS addresses only the authorized Colstrip transmission project. Additional energy transportation systems parallel with the Colstrip transmission line or segments of the line could be proposed in the future. At such time, preparation of an environmental impact statement would be required.

The 2020 study (Draft Report, Phase 1, Pacific Northwest Long Range East-West Energy Corridor Study, 1977), based on certain assumptions and hypothetical scenarios, did indicate that seven east-west corridors could be required. In one scenario, one line would first be constructed in each corridor. Additional lines would be built in each corridor to meet the transmission system reliability standards.

As to future expansion of the Colstrip corridor, we can only state that one double-circuit line is planned at this time. There may be a possibility of adding additional lines in the long term. The location of future lines depends upon where the generation is sited and where the loads develop and may be strongly influenced by legislative limitations concerning land uses.

Comment: ...I suggest that, at the least, a regional study of all corridor alternatives from eastern Montana to eastern Washington assuming the transmission needs identified by the BPA in its "2020 study" should be conducted and incorporated in this EIS before any new major transmission corridors are established. The need for the regional scope of such a study is highlighted by the fact that many of these same problems need to be addressed on another transmission line project in the area. (Philip Barrett, DSC-81-L39-22)

Response: Considerable attention has been given to energy corridor planning in the last several years. Concern has been expressed for many reasons, among them the potential need for major energy corridors resulting from the rapid development of the West's energy resources and the concerns raised by the quoted BPA/USFS 2020 Study.

In 1976, passage of the National Forest Management Act of 1976 (NFMA), and the Federal Land Policy and Management Act of 1976 (FLPMA) caused the BLM and FS to consider initiating planning efforts for transportation corridors, including pipelines, electric transmission lines, railroads, and highways. In addition, about 25 western and eastern private utilities formed the Western Utilities Groups to represent the utility industry's concerns in any current corridor planning efforts.

More recently, the BLM and FS, in cooperation with the State of Montana, have begun the initial phases of an interagency utility transportation corridor planning effort within Montana.

A summary of the conclusions resulting from past and ongoing studies follows:

1. Industry has been hesitant in the past to make long-range plans which might affect rights-of-way corridor needs. This attitude has changed somewhat since the western states enacted strict energy facility siting laws, most of which require advanced reporting locations for new power plants and transmission lines.

Utilities have also had difficulties in designating rights-of-way corridors, because of the current unsettled status of energy planning and economic growth. In the Northwest the enactment of the Pacific Northwest Electric Power Planning and Conservation Act gives the newly formed Regional Council 2 years to develop a load forecast to the year 2020 and a regional energy plan. Until this is done, it will be very difficult to identify the need for corridors.

2. Planning and location criteria for different transmission voltages vary considerably. As a result, joint corridor use is not always practicable.
3. The corridor carrying capacity will vary with the landscape that is affected. Such determinations must be made on the basis of detailed corridor or centerline studies. The need for future lines for the Colstrip Project has not been identified at this time. To conduct detailed studies now without defined needs would be an unwise expenditure of public and/or ratepayers' funds.

Comment: What effect will the establishment of the corridor and this activation of a high voltage line have on existing power lines that service the area, and what are the plans for relocating the existing line, if any? (Martin Dippold, DSC-81-T1-11)

Response: Construction and energization of the 500-kV transmission line will have no effects on existing transmission and distribution lines. However, the BPA Hot Springs-Anaconda 230-kV line and the Montana Power Co. Ovando-Mill Creek 230-kV line will be tied into the new substation to be built in the vicinity of Garrison. These 230-kV interconnections will serve to strengthen the existing transmission system. Impacts caused by any 230-kV transmission lines are discussed in conjunction with the Garrison Substation site in the EIS Supplement.

Comment: Your environmental impact analysis is totally deficient in regard to the impacts upon endangered species. It is a matter of record that bald and golden eagles nest in the vicinity of Basin and that the federally funded Interstate Highway 15 project, between Boulder and Elk Park, is subject to some very substantial constraints on construction as a result. Further, I have on several occasions observed eagles in the Thunderbolt Mountain and Lower Cottonwood Creek vicinities. Clearing of the corridor and the construction of the powerline itself will have a serious impact upon these eagles. A single helicopter flight, which you utilized to assess the potential impacts, is a totally deficient method of assessing the same. (Richard J. Llewellyn, DSC-81-L43-16)

Response: BPA experts have consulted with Forest Service, Bureau of Land Management, Department of Natural Resources and Conservation, and Fish and Wildlife Service experts regarding impacts on threatened or endangered species. The U.S. Fish and Wildlife Service issued a biological opinion that the proposed transmission line is not likely to jeopardize the continued existence of the bald eagle. This opinion is subject to certain stipulations at the Missouri River crossing above Townsend, where the greatest concentration of bald eagles and habitat occur in the study area.

We appreciate your information on sightings of eagles in the Thunderbolt Mountain and Cottonwood Creek vicinities, and will add those areas to a list of others we are concerned about. See Consultation, Review, and Permits Requirements Section of the Supplement for additional discussion.

Comment: We think that the federal administrators that are allowing you to survey on federal lands are going in excess of their authority and can perhaps be held personally liable for allowing you to make those surveys prior to the decision-making process being done completely. We intend to hold those agencies and those individuals involved with making that decision personally liable for the effect on federal lands of the surveying that's already taken place. The surveying already has destroyed the habitat of the deer and elk population in those areas, before the decision has actually been made. (Stuart Lewin, DSC-81-T2-72)

Response: The Federal land management agencies have the authority, in accordance with Title V of the Federal Land Policy and Management Act of October 21, 1976, to issue permits for location surveys on Federal lands. Surveys are not considered to be irreversible actions or an irretrievable commitment of resources. Conditions in the temporary grant assure the maintenance of the productivity and habitat of the area.

Comment: Is it of no concern that this area supports 300 elk (excluding deer) during the four major months of winter? If anything, the powerline should be moved at least 1 mile north of its present location across this area.

This will increase access to an area that needs to be secluded. Plus it will give an excuse to Forest Service timber organizations to harvest in areas previously thought inaccessible. Every wildlife biologist knows what reduced thermal cover does to big game winter ranges. Not to mention the strain put on elk during a hard winter. (Robert Lewis, DSC-81-L35-3)

Response: The area from Pole Mountain to Berkin Flat has been identified in the Draft Supplement as a high impact area because of the critical winter range for elk and deer. The loss of thermal cover was listed as an impact on pages 2-4, 2-7, 3-7, 3-11, and 3-16 of the Draft Supplement.

Because of the high impact to the critical winter habitat, the mitigation measures 1 and 2 on pages 2-2 were proposed.

A line one mile north of the present proposed location will be given consideration during centerline location.

Comment: Is there really that much more difference between livestock tolerance to high voltage as to Deer & Elk tolerance? (Marlin and Donna Gilman, DSC-81-T1L18-3)

Response: No.

Comment: There are four Golden Eagles nesting on and near this property of ours where this powerline crosses; they too would be in great danger from a high voltage line. (Marlin and Donna Gilman, DSC-81-T1L18-7)

Response: Your information is appreciated. It is BPA's practice, during the centerline location process, to avoid traditional nesting sites of eagles and other species of special interest or concern. This mitigation measure is listed in Appendix A.3.3.3-6, Volume 2, Colstrip Project EIS. As stated on page 2-2 of this Supplement, this measure applies to the proposed corridor.

Comment: I do not believe the wildlife resource has been adequately addressed.

The disturbance factors on wildlife can't be limited to the immediate areas of the transmission lines as addressed in the EIS. It appears as though the effects on big game animals are being used to describe the total impact on all wildlife. The argument, what is good for big game is good for all wildlife species is no longer valid or realistic. Many species, particularly cavity-dwelling species have specific habitat requirements different than those of big game. These were not addressed. In each agency alternative there will be serious impacts on the plant and wildlife resources.

I'm critical of the information provided for the project biologists on the interdisciplinary team. I would be interested in reviewing any wildlife reports for this project.

I think that these power lines will be interrupting and degrading the quality of habitat for these additional wildlife species and I don't believe that that has been adequately addressed. (Dick Blodnick, DSC-81-T1-130)

Response: The concerns for wildlife which you raise were addressed in previous Colstrip documents (BPA, 1978; Dept. of Interior, 1979). References for reports used to assess wildlife impacts of this project are listed in these documents.

Comment: Perhaps fish would also be damaged in time! (Marlin, Donna Gilman, DSC-81-T1L18-6)

Response: The electric field in water directly under a transmission line is over 400,000 times weaker than in the air just above the ground. Such low levels will not cause any long-term effects on fish.

Comment: I object to almost nonexistent mention of heavy impact on Grouse. They are very important to me. (Debbie Sheehan, DSC-81-T2L20-9)

Response: No significant impact is expected on forest grouse.

Comment: Project impacts to fisheries were only briefly discussed in Appendix B. I was unable to find any reference to what trout species were identified, or amount of angler use.

Large scale surface disturbances can affect the quantity as well as quality of water. The sediment from such disturbances can reduce both the quantity and quality of pools in streams necessary for healthy trout populations.

There is no mention of offsite impacts to fisheries in the Supplement. Heavy sediment can be carried several miles downstream, adversely influencing the water quality in larger streams, such as the Boulder River, that are often considered free of any impacts because they are not in the immediate construction area.

Culverts can impede fish movement, particularly where stream gradients are steep. This is critical where roads cross small tributaries considered unsuitable for resident fish, but are used for a few months each year as spawning streams. Such spawning streams are very important for the recruitment of downstream fisheries. (James R. Lloyd, USDA-FS-Galletin Forest, DSC-81-L42-1)

Response: The discussion of impacts on fisheries, as presented in Appendix B of the Draft Supplement, was a summary of the information included in the Colstrip Project EIS, Volumes 1 and 2. Information on fisheries is provided in Appendix A3.1.2.7 of the EIS, Volume 2.

Comment: Basically we are opposed and wish you to cease and desist from all plans, surveys, and/or construction which would bring the power lines through the Boulder valley and its adjoining private federal and state lands for the following reasons: One, the Boulder valley and the adjoining mountain areas comprising the Elkhorn Wilderness Study Area constitute a...unique agricultural area, two, due to the unique nature of this area, there is no satisfactory placement of the proposed Bonneville Power Administration's transmission lines through this area without seriously compromising and destroying the unique...agricultural attributes and the balance of this area...

...five, the proposed lines passing through agricultural grazing and cattle grazing corridors would substantially and negatively influence the agricultural use and land in the valley... (Stuart Lewin, DSC-81-T2-53)

Response: The agricultural area in and around Boulder has not been identified as either Prime or Unique. The location of the proposed transmission lines would not substantially influence agricultural grazing use.

Comment: The dangers of handling aluminum pipe under such conditions are numerous!! (Marlin and Donna Gilman, DSC-81-T1L18-1)

Comment: According to reports, irrigation sprinklers must be grounded to avoid shock from static electricity. (Patrick M. and Carol A. McGillis, DSC-81-T1L14-4)

Response: The land beneath BPA transmission lines has been safely irrigated for many years. Practices have been developed to minimize hazards to irrigators created by contact with energized conductors. Individual tower locations will be worked out with the landowner during the land acquisition process. At the same time, BPA provides technical assistance to irrigators who desire it. Please see the following response, also.

Comment: When we first learned of the proposed line through our valley we were informed by BPA personnel that the centerline of the Designated Corridor would follow the border between our two ranches. In recent years both ranches have been greatly improved. We have installed sprinkler irrigation systems to conserve water and increase productivity. All this expense and future productivity will be nullified if the line is allowed to go through this area.

Further, should the line be built on Johnson property, as the sprinkler lines run north and south, all lines would have to be shortened to accommodate the power line. This would result in the inability to irrigate prime farm land. Should the line be built on the Kelson property, where the sprinkler lines run east and west, the main water line runs north and south. This mainline would have to be shortened to protect the pump from fallout. This would result in the loss of prime productive acres for the Kelson property. (Mrs. Lou C. Kelson, Carl A. Johnson, DSC-81-L37-1, 2)

Response: Should the line be placed on the Kelson property, the sprinklers could continue to reach the fence. The only irrigated land directly affected would be that inside the four tower legs (26 square feet) and that not reachable with mechanized farming equipment. Towers would be spaced approximately 1,000 to 1,300 feet apart, and would be placed to avoid the main water line on the property. It would be necessary to properly ground the main water line.

Should the line be placed on the Johnson property, it would be necessary to reduce the length of the sprinkler lines about 30 feet, to accommodate the towers. As on the Kelson property, a certain amount of agricultural land would be taken out of production.

Individual tower locations would be worked out with the affected landowners, to locate the towers where they would cause the least impact on farming operations, i.e., in corners of fields or where sprinkler patterns change. It is BPA's practice to compensate landowners for the loss of productive farmland.

Comment: In regard to statement on rangeland on page 3-27. It states that rangeland impacts would be low because even though productivity of the rangeland crossed is rated low, its ability to recover is good. We feel this is contradictory. How can the rangeland be rated low and still recover quickly? This is not possible. (John and Carole Hollenback, DSC-81-T1-L4)

Response: The ability of the range to recover depends upon whether there will be just surface disturbance (driving or trampling) or whether there will be soil disturbance (road building). Surface disturbance will not severely damage the range and recovery will be good. Soil disturbance, however, will severely damage the range and recovery will be slow. This is due mainly to the shallow soils and the short growing season. The statements on rangeland in Chapter 3 of the EIS Supplement has been changed to reflect this.

Comment: Your environmental impact analysis is grossly deficient in its analysis of impacts upon local wilderness study areas. The Elkhorn Wilderness Study Area is immediately adjacent to the proposed powerline

corridor, and the visual impact of the powerline will literally destroy a good portion of the study area as wilderness. (Richard J. Llewellyn, DSC-81-L43-19)

Comment: We feel that the Elkhorn Wilderness Area and Elkhorn Mountains are of substantial importance...,and that it would be short-sighted to put the lines that close to the Elkhorn Wilderness Area and would have a very substantial negative impact. (Stuart Lewin, DSC-81-T2-83)

Response: The Elkhorn Wilderness Study Area was designated by Congress on October 19, 1976 for study to determine its suitability or nonsuitability for preservation as wilderness. In some locations, additional areas outside the boundary identified by Congress were included for study. These areas were included because they may meet the criteria for wilderness designation or may make identification of the boundary easier.

The proposed transmission line would be adjacent to the Elkhorn Wilderness Study Area in Section 19, near McCarthy Creek. In that location, the area is forested, reducing the ability to view the line, except when within the right-of-way or very near the transmission line. Those climbing Elkhorn Peak and Crow Peak will be able to look down on the transmission line from a distance of six miles. At this distance, the magnitude of the transmission line will be diminished.

Comment: We believe impacts upon the Continental Divide National Scenic Trail should be given considerable emphasis. A definite route for the trail has not as yet been selected. It would be appreciated if you would place us on your mailing list of organizations to be contacted regarding other activities in the vicinity of the Continental Divide. (James R. Wolf, CDNST, DSC-81-L26)

Response: The trail is discussed in the Recreation Resources Legislation Section of Chapter 7. You have been placed on our mailing list.

Comment: BPA says 'minute amounts of ozone' but that and all other industrial output adds up. All the small impacts add up and have detrimental effects on man and the earth. (Char Webb, DSC-81-T2L21)

Response: The amount of ozone produced by transmission lines is almost impossible to detect even with the most sensitive instruments. Such minute amounts of ozone do not contribute significantly to air pollution.

Comment: The discussion in Appendix C is markedly superficial in comparison to "Considerations in Transmission Line Routing" by the Minnesota Environmental Quality Board. The discussion in Appendix C is biased. Words have been carefully chosen to discredit research not in

support of the BPA position and to minimize risks and effects. There are significant omissions in the discussion. (Robert L. Deschamps III, DSC-81-L34-1)

Response: As indicated on page C-3 of the draft EIS, Appendix C is only a summary of the most recent developments involving biological effects of transmission lines. References are cited where further details can be found. The conclusion that transmission lines do not pose a health hazard is consistent with the majority of published reviews on the subject. The report, "Considerations in Transmission Line Routing," did not conclude that transmission lines are a proven health hazard. The wording in Appendix C reflects an objective assessment of a controversial subject; there are no significant omissions of information. As specifically stated in the EIS Supplement (page C-7), it is not possible to guarantee zero risk. The information in Appendix C is a summary of the supporting evidence for the generally held conclusion that transmission lines pose no serious health threat to people.

Comment: This line would be approximately 300 ft. from our house. There are not enough facts concerning the health hazards to people due to high voltage. We feel that the health of the 5 people in our home is much more important than cheap power for Washington and Oregon State's people. (Marlin and Donna Gilman, DSC-81-T1L18-2)

Comment: The potential health hazards are of great concern to us, our neighbors and the community. (Ron and Lynn Cunningham, DSC-81-T1L13)

Comment: It is my impression that no long-term studies can really verify just how safe these lines are concerning human beings. (Patrick McGillis, DSC-81-T1L14)

Comment: In view of some of the other "misinformation" in the EIS, we would definitely question BPA's assertion that there are no adverse electrical and biological effects. It appears to us that there has not been sufficient time and effort given to determining the long-term effects on children and ourselves of living in close proximity to high voltage lines. (DSC-81-L31-6, GCHC)

Comment: BPA has put little or no emphasis on possible health hazards, considering them a "necessary evil" in our advanced technological society.

BPA has shown no willingness to be responsible for possible health problems arising (physical or psychological) from any aspect of the project; laying the burden of proof on the victim, or putting the responsibility on 'society', as above.

BPA has not done a thorough investigation of the detrimental affects to health of people/animals of electric power. It is their responsibility to find out completely, before laying it out to affect others. (Char Webb, DSC-81-T2L21)

Comment: There is more to living with a high-voltage transmission line than looking at it or being bombarded by electromagnetic radiation from it. Those stigmas should be better identified and evaluated in this Draft Supplement. For all possible impacts (but especially esthetic, social, and health related), you at least should discriminate between casual encounters and prolonged, day-to-day exposure. (Philip Barrett, DSC-81-L39-16)

Response: The information presented in Appendix C of the EIS Supplement is evidence of the continuing emphasis by BPA and the utility industry on investigation of possible health hazards associated with transmission lines. Over 20 research projects sponsored by DOE and/or the Electrical Power Research Institute (EPRI) are currently underway. In addition, BPA closely follows research being conducted throughout the world on this subject. Results from over 20 years of research shows that there is no reason to believe that the electrical effects of a 500-kV line are harmful. Thousands of miles of 500-kV lines have been successfully operated throughout the U.S. for several years. People living and working near BPA lines are not reporting any harmful effects of electric or magnetic fields. Likewise, utility personnel working on high-voltage lines have no apparent health problems.

As described in the Supplement, there is no evidence that even the maximum fields found beneath a 500-kV line are harmful. At 300 feet from a 500-kV line, electric field strength is greatly reduced and is comparable to levels produced by household electrical appliances.

This Supplement is not intended to be evaluated independently of the previous documentation for this project, only to summarize those works and evaluate the proposed new corridor locations. Distinctions between long and short-term effects were made in the Colstrip Project EIS. The various resource analysis methodologies determined whether such a distinction was necessary. The text of the EIS Supplement has been revised to reflect, in accordance with the National Environmental Policy Act, whether impacts are long- or short-term, and direct or indirect.

Comment: I wish to address to an item as a private individual and as a beekeeper. For we are concerned about the effects of the magnetic fields created by high voltage power lines, and I have enclosed three articles relating in various ways as to the energy field and the power of these lines.

The Colstrip EIS Supplement Appendix C raises more questions than it provides answers about magnetic fields.

Simply put you are creating a situation for us to which you have no real answers concerning magnetic fields. (Paul Peterson, DSC-81-T1-29)

Comment: We request the long-term effects of living in close proximity to high voltage power lines and the substation that serves them. (Judy Hogan, DSC-81-T1-44)

Comment: ...I'm a little more concerned about the health end of what the transmission line will do.

...I didn't see enough in the report that they have put out to tell me what the impact would be on human life, what it would be by using the microwave for transmitting because...microwave will make you sterile. (Henry McGinnis, DSC-81-l-51)

Comment: Many unanswered questions on health and biological effects still disturb us. The unseen results of its presence and the unanswered questions of effects on our health and that of our animals, plants and land, still give us much worry in spite of assurances from BPA. (Melvin Beck, DSC-81-T1-63)

Comment: ...one of the areas that I'm most concerned with that haven't really been touched on in any of the papers that have been presented by any of the organizations are the long-term health effects on people and livestock. ...we don't know yet what effects these high voltage lines will have on us or our children.

We don't know yet what the long-range effects of these things are and it hasn't been adequately investigated nor presented by anybody. (Mrs. A. A. LaMont, DSC-81-T1-88)

Comment: There is no discussion of long-term biological effects on the line. (Rick Lacy, DSC-81-T1-l21)

Comment: ...I have been advised by my medical authority to stay away from the immediate area around radio, television, radar transmitters, and towers and transmitting areas. Because I have a pacemaker. I have a demand unit...

Will that be hazardous to my health? When I go under that line I don't have to go under that line for one minute or ten seconds or wait for a buildup; from what I understand, it's immediate action. So will I be safe to go under that line?

Will those discharges be emitted so strongly that it could affect me? I'd like to know the answer to that. Will I have to stay on this side of the line the rest of my life, or will I be able to go over there, or will I have to get some kind of an armored suit to walk underneath it? (Rudolph Klune, DSC-81-T2-12)

Comment: ...we need assurances that this line is not going to be hazardous or harmful to our health. (David Rieder, DSC-81-T2-16)

Comment: But I'm wondering what sort of an effect this line is going to have on cattle as far as passage beneath it. (Larry Lattin, DSC-81-T2-24)

Comment: I think the health hazards of two 500-kilovolt lines are real. I think the burden of proof should be on BPA to show us without a doubt, as Dave Rieder pointed out, rather than the public having to prove the contrary. (Sam Samson, DSC-81-T2-31)

Comment: Regarding health factors, I wish to just point out one problem that I believe is indicative of the way that we are getting a so-called snow job as to nothing being wrong with these lines. Agreed, there's a lot of work, there's a lot of controversy, there are a lot of unanswered questions, but we'll approach just one, and that is the effect that the lines would have regarding a letting level or a release factor regarding a certain segment of our population that has not testified here tonight and probably won't, children. The large TERP statement just guessed. It said five milliamps would probably be okay for a release factor for children. It was just a guess. The Colstrip EIS said nothing about it.

Finally, we have the draft supplement that states, "Lines are designed so that maximum current a person could receive by touching an object does not exceed five milliamps" -- they're talking about a truck, a schoolbus or whatever -- "the level at which children can still let go of the object." Now, that is -- That is a conclusion. That is telling you that it's all right that children can touch a bus or a truck that happens to be underneath that power line and still let go. They're giving you a scientific fact.

However, there are some other facts that again the mother agency, Department of Energy, sees a little -- in a bit different light.

"The safety of any current source must be judged against the safe levels for sensitive individuals exposed to it. Example, children. Only limited data exists to aid in determining hazard levels for children.

Conclusions:

People that find this current level startling (they're talking about five milliamps, what we've just heard is safe and sound for everyone, including your level) ought to withdraw voluntarily from the vehicle. Based upon extrapolated data, a very small child might be unable to voluntarily release hold of a vehicle if the current is five m.a. or greater."

Quite a different conclusion than the one that says it's a safe level. Again, BPA comes out, and in their recommendations they state that 3.5 m.a. is a recommendation for the release factor for children. (Paul B. Smith, DSC-81-T2-48)

Comment: What would be the biological effects of the high voltage lines on people? Also, how would grazing cattle be affected over a period of time? (Ivan Johnston, DSC-81-T1-L6)

Response: The subjects mentioned in these comments are all addressed in Appendix C of the Supplement. An abbreviated summary has been added to the text in the discussion of major issues under "Scoping", Chapter 1. Mr. Rudolph Klune received a letter from BPA with more detailed information and precautions.

Comment: ...there's another little thing that was kind of slipped by as far as the -- in connection with the water, and that is the maintenance of the right-of-way.

Montana Power, in their application, stated that they were not going to use any herbicides in maintaining their right-of-way. BPA has now come out and said that they are going to. They don't say what type of herbicides, when they're going to use them, how they will affect the surface water rights, what problems that ranchers and people that depend on those water systems in these steep gradient areas such as the Boulder drainage are going to suffer. That needs to be addressed. (Paul B. Smith, DSC-81-T2-47)

Comment: I object to herbicides being used to control weeds. Basin Creek is still drinkable. That will make it not so. (Debbie Sheehan, DSC-81-T2L20)

Comment: Your environmental impact analysis of the effects of the proposed application of herbicides of an unspecified type is totally deficient. The BPA perhaps has something in mind like "Agent Orange"? What will this do to fish and wildlife populations and persons using the area for recreational purposes? Certainly, the effects will be adverse and major. (Richard J. Llewellyn, DSC-81-L43-15)

Response: See discussion of herbicides in Appendix A, EIS Supplement.

Comment: Fire problems. If we had a fire up there near our section of land, I guess I'm suppose to put it out. There's no guarantee you'll help us with that either. (David Rieder, DSC-81-T2-19)

Response: BPA takes various precautions to (1) prevent the outbreak of fire, and (2) control fire in the event of an outbreak. BPA's Transmission Engineering Standard Construction Specifications prescribe, for the benefit of BPA's contractors, acceptable burning methods. Contractors are required to maintain the complement of fire fighting tools required by applicable forestry regulations. BPA's Transmission Line Maintenance Standards require that maintenance personnel comply with all State fire regulations. BPA has an existing Memorandum of Understanding with the Forest Service, under which detailed Project Plans, including fire management, are developed.

Comment: The possible effects of forest fires on this line and the risks associated with several lines through forested areas should be evaluated in this Draft Supplement. Possibly you should avoid dryer south facing slopes in selecting a route. (Philip Barrett, DSC-81-L39-19)

Response: The Bonneville Power Administration is very aware of the possibility of outages which might be caused by fires of any type including forest fires. Laboratory studies at BPA resulted in an IEEE (Institute of Electrical and Electronic Engineers) paper entitled Fire Induced Flashovers of EHV Lines by H. J. West and D. W. McMullan (IEEE Paper No. A79 047-2.) These studies indicated that it takes a very hot concentrated fire to sufficiently ionize the gases surrounding a transmission line to cause a flashover. Such a flashover occurred during the explosion and fire at the Utah State Prison. However, the blackout in Utah was only indirectly attributed to by the fire and explosion. Improper relaying of an additional 345-kV line and lack of generation in the northern part of the state resulted in the cascading blackout. Due to the dispersed generation facilities and electrically strong transmission grid on the BPA system, such an event is highly unlikely.

BPA has, on occasion, de-energized transmission lines during forest fires to minimize any hazard to fire fighters due to flashovers or leakage currents caused by fire suppressant chemicals and water used to combat the fire. However, on transmission lines utilizing steel structures, we have not found even one case of an extended outage caused by a forest fire. Virtually all of the fire-induced outages on the BPA system have been caused by crop burning in cultivated areas. Even in this case, extended outages have only occurred on the lower voltage wood pole lines where the poles or crossarms caught fire. In any case, disruption to BPA customers has only been momentary.

Comment: If high voltage lines are as wonderful and safe as BPA would like us to believe, why the necessity of such publications as Tips on How to Behave Near High Voltage Lines. (Gold Creek Homeowners Club, DSC-81-L31-7)

Response: The BPA publication, Tips on How to Behave Near High Voltage Lines, indicates the ordinary precautions one follows to avoid hazards or annoyance from transmission lines. To some the booklet may be informative, to others a simple reminder of do's and don'ts.

Comment: The second reason is that the line will be a hazard to aviation. Montana has the second highest concentration of pilots and aircraft per capita of the states and the Deer Lodge Valley is a main corridor of air traffic through the state. Occasionally pilots are forced to fly low through the valley in certain weather conditions.

Our National Guard flies to Deer Lodge from Helena every month and practices maneuvers in the area, crossing the proposed routes frequently. (Carmin Mowbray, DSC-81-L28-2)

Response: Any part of the transmission line that would likely be classified as an obstruction under FAA Regulations will be submitted to the Federal Aviation Administration for review. BPA will comply with FAA requirements for safety measures.

Comment: We suggest that measures be taken to protect the travelling public. During the time of transmission line construction all construction zone signing should conform to the requirements of the Manual on Uniform Traffic Control Devices... (Volmer K. Jensen, U.S. Dept. of Transportation, DSC-81-L27-1)

Response: The contractor must comply with American Association of State Highway and Transportation Officials (AASHTO) requirements when entering and leaving public roads. BPA obtains Approach Road permits for each county, State, or Federal road it intends to use. These permits are issued by county, State, and/or Federal road engineers and contain whatever restrictions the local engineer deems necessary. Restrictions may include flagman, coning to reduce lane usage, warning signs, etc.

When crossing public roads and highways with overhead conductor stringing, the contractor must first erect guard structures to maintain overhead clearance for such conductor. These structures must be set back onto the highway right-of-way and cannot interfere with or restrict traffic. Reflectorized high visibility signs must be attached to such structures within the right-of-way of any road. Signs must be a minimum of 36 square inches and be visible to traffic from either direction.

Comment: We would also suggest that the entire EIS proposal be reviewed to insure that emergency medical facilities will be accessible to the workers constructing the transmission line. (Dept. of Health and Human Services, Denver, DSC-81-L33-2)

Response: Emergency medical facilities are expected to be accessible to construction workers on the same basis as they are available to the local citizenry. However, due to the remote location of some construction sites, special care must be taken to ensure prompt communications with emergency medical transport vehicles. BPA inspectors at the work sites will be equipped with mobile radio/telephones which can be used to summon emergency aid vehicles. Likewise, the contractor's supervisory personnel maintain radio communication with their dispatch centers and between crews. The dispatch centers can also summon emergency aid vehicles. BPA inspectors are required to be trained in First Aid and Cardio-Pulmonary Resuscitation (C.P.R.). I.B.E.W. electrical workers are also required to be trained in C.P.R.

Comment: There are considerations, such as the effect of heavier traffic upon school children... (Ivan Johnston, DSC-81-T1-26)

Comment: We are concerned with the increase in the amount of traffic that would be a direct result of building a line and substation in Gold Creek. The traffic would have to go past our small school and this would be a threat to our children. (Francis and Linda Hogan, DSC-81-T1-L8)

Response: If personnel do travel through city limits and/or past a school, they would be expected, like any other citizen, to adhere to local and/or state traffic regulations.

There should be minimal impact on schools as a result of increased traffic. Personnel will have traveled to the job before school starts and will return long after the children have gone home. Intermittent travel during the day for such purposes as material delivery will be regulated by the posted speed limit in the vicinity of the school.

Comment: Who will pay for the expanded services and road maintenance required to support the increased usage of the present road system the construction and maintenance of the line and substation will create? (Martin Dippold, DSC-81-T1-9)

Comment: We are also concerned that with all the heavy equipment that will be brought in to build and maintain the line who will be responsible for paying and repairing all the damages to county roads and bridges. (John and Carole Hollenback, DSC-81-T1-L4)

Comment: Who will foot the bill for upgrading and maintaining roads to the substation and corridor sites? (Leo Berry, DNRC, Montana, DSC-81-L31-5)

Response: The expense of any initial construction or upgrading of access roads, if required for construction, will be incurred by BPA. Maintenance of access roads used only for transmission operation is to be at BPA's expense. Under the terms of access road easement agreements with landowners, BPA or its assignees agree to repair access road damage attributable to BPA, its employees, its contractors, or its assignees.

Comment: The adverse socio-economic effects of construction (we've seen what happened at the Colstrip slum). (Robert Lewis, DSC-81-L35-8)

Response: Socio-economic effects of constructing a 500-kV transmission line are primarily related to the temporary impact of construction workers on local economies. These impacts were addressed in the original Colstrip Project EIS, Volume 1, Section 3.1.2.13. There are few, if any, impacts on community services. The use of easement does not remove the land from the tax rolls.

Comment: BPA considers the line and its affects in bits and pieces not very concerned with the whole picture and how it affects the individual. A "General" attitude. (Char. Webb, DSC-81-T2L21-5)

Response: The Colstrip Project EIS addressed all the environmental impacts associated with construction of the 500-kV transmission lines, from Colstrip to Hot Springs, Montana.

This supplement to the EIS considers possible alternatives to segments of the corridor in two areas, Boulder and Deer Lodge.

Effects on the individual and communities is included under socio-economic impacts in Section 3.2.2.13 in Volume 1 of the EIS.

Comment: ...One, the Boulder Valley and the adjoining mountain areas comprising the Elkhorn Wilderness Study area constitute a unique recreational area, two,...there is no satisfactory placement of the proposed Bonneville Administration's transmission lines through this area without seriously compromising and destroying the unique recreational,...attributes and the balance of this area; three, this area serves as an important recreational area for the metropolitan areas of Helena and Butte. With energy costs rising, the people living in these areas find themselves limited in their travels, and more and more are using this area to satisfy their recreational needs. (Stuart Lewin, DSC-81-T2-55)

Comment: No place under this do you list recreational use. We feel that the EIS statement does not carefully enough deal with the recreational, unique recreational aspects of the Elkhorn Wilderness Area and with what would happen if this line is put through here.

Many of them go over to the Elkhorn Wilderness for skiing, for other recreational activities. We feel that they will not do that if they have to -- One of the reasons they do that is because the area is pristine, because there's wildlife, because there are birds, and we feel that they will not do that in the same numbers if the view from the hotel is adversely affected, if they have to cross under huge power lines in order to enjoy the wilderness areas.

...you need to consider the effect on the -- on the population of people in the state that come down here from long distances to view and some to hunt the elk. (Stuart Lewin, DSC-81-T2-77)

Comment: ...people said that having to look at these corridor lines would -- they would be very unhappy about it and they probably would not come down to this area for those recreation facilities. I disagree with your conclusion, therefore, and feel that you have not carefully enough considered this particular aspect. (Stuart Lewin, DSC-81-T2-75)

Response: Recreation has been carefully examined and addressed as a separate topic in the EIS Supplement, on page 2-5. It is also addressed within each alternative discussion.

Comment: On page 2.6, dealing with residential, paragraph three, you say, "This corridor is located close to Boulder and several residences in the valley to the north of Boulder. Although no residences would be crossed or removed, indirect visual impacts could occur." We believe they're substantial. We believe you should indicate they're substantial. (Stuart Lewis, DSC-81-T2-81)

Response: The visual impacts of the Boulder and Basin corridors are high where viewed from the Boulder Valley, as shown on the Visual Resources Impact Ratings Map.

Comment: I am opposed to the proposed BPA powerline routes for two reasons. First, its tremendous visual impact, regardless of which route is chosen. Let me point out that within our housing subdivision, Wildflower Hills on Beck Hill, it was mandatory that all our power and telephone lines be buried for esthetic reasons. Now this powerline with its 162-foot tall towers will be visible from these homes if Routes A or AAA are used. (Carmine Mowbray, DSC-81-L28-1)

Response: See discussions of Esthetics in Thunderbolt A, AA, and AAA sections of the EIS Supplement.

Comment: 1 - What effect will it have on radio programs? We know what happens when you drive under a high voltage line, will we have a steady hum or interference?

2 - We get our TV reception from Butte on channels 4 and 6. If the AAA route is used the line would come directly across our path of reception. What will it do to our TV then? If our TV is cut off I think the B.P.A. should give the Garrison area cable TV.

3 - Will it be possible to get satellite TV reception? (Alfred E. Gerdts, DSC-81-T1L5)

Comment: We feel that it is very important that you be made aware of our particular situation before a final decision, on the location of your powerline, is made. If your proposed line should happen to parallel the existing line, we feel, this could have a very adverse affect on the signal we now receive, or possibly destroy it altogether. (James A. Morse, Dummond TV Tax District, DSC-81-T1L15-1)

Comment: We also have serious reservations about our television reception on Beck Hill. Because the preferred route is between the microwave location and our home we feel our reception will be impaired. We also feel that the BPA cannot totally assure us that this problem will not arise. (Patrick M. and Carol A. McGillis, DSC-81-T1-L14-3)

Response: Reception of FM radio will not be degraded by the operation of a transmission line. Television reception from translator stations and from regular transmitted broadcasts could be affected by the new transmission line. The transmission tower would have to be located directly in the line between the repeater and the citizen's receiving antenna, in order to interfere with the signals. The Townsend-Garrison transmission line is designed so that very little television interference is produced. One would need to be receiving a weak signal and be very near the line.

Reports of television interference are investigated by BPA. Solutions for transmission line-caused television reception problems could include connection to nearby cable TV where it is available. Selection of cable TV as a solution for a particular case is dependent upon the cost of appropriate alternatives, the citizens's preference, and the number of valid complainants who would share in the installation. Improvements to a resident's antenna will often be more satisfactory since there are no cable rental fees to pay.

Satellite TV reception is not affected by transmission lines. The common method of receiving weak satellite signals is to use a highly directional antenna, such as a large parabolic antenna, which collects and focuses enough signal for processing. The only signals which this type of antenna receives are those from the location in the sky where they are pointed. At times the sun lines up with the satellite and antenna, which causes temporary reception problems due to the sun's electrical activities.

Reception of AM radio is not likely to be affected by the new transmission line unless the receiver is on or very near the right-of-way. As in the case of television interference, radio interference caused by transmission lines can be measured and verified where and when it exists. Again, mitigation to restore reception to previous levels would be undertaken and paid for by BPA.

Comment: In consideration of system-wide reliability, geologic hazards that could take out towers for more than one line in a single event, such as active alluvial fans and faults, should probably be avoided. (Philip Barrett, DSC-81-L39-21)

Response: Avoidance of geologic hazards is a criterion used in locating transmission line facilities. Large mass movement areas are avoided wherever possible. Smaller areas are usually localized and can be avoided in most cases by slight line deviation or proper structure location.

Comment: What about fishing in any stream the line would cross? Could you get shocked the same as fishing during a lightning storm? (Alfred E. Gerdtz, DSC-81-T1L5-4)

Response: Fishing in streams which the line crosses would not present a hazard. Most major rivers in the Pacific Northwest are traversed by lines of this voltage.

Comment: On the proposed Northern route, if the substation were to be kept on the north of the valley, you say there would have to be two additional 230-kV lines run across the valley to existing lines. If that is so, we cannot see how they would cause nearly the impact on people, property, or wildlife as the proposed 500-kV line. (William C. and Susan E. Wohlers, DSC-81-T1-L2)

Response: See discussion of Hoover Creek Substation in Alternatives Eliminated from Detailed Study, EIS Supplement.

Comment: The original EIS states that these towers are being constructed to accommodate d/c lines as well as a/c, yet no mention is made as to the change in electrical fields induced by the difference or the difference in health hazards involved.

One of the problems that I feel that the draft EIS, and in fact the first EIS and even the transmission environmental report did not address, was direct current. Direct current, as far as the lines are concerned, is not going to be the plan for the day. However, the towers are being equipped with transformers and insulators and so forth for direct current. The only address to direct current in the environmental statement is that the environmental impacts would be similar.

There is a significant difference between direct current and alternating current; that the corona effect is different, the field strength is different, there's much more variable ground levels. This is not addressed at all in the EIS or the draft EIS or anywhere else. (Paul B. Smith, DSC-81-T2-43)

Response: The Townsend-Garrison Section is not being considered for conversion to direct current transmission. As a result, further discussion in the Supplement is not needed.

IV. ALTERNATIVES

Comment: Number three, I believe the coal should be shipped to the areas of population where the power is wanted. (Sam Samson, DSC-81-T2-31)

Comment: So I think they should like maybe truck the coal over there and build plants and that over there and then destroy their state, their air. (Dave LeMieux, DSC-81-T2-39)

Comment: ...the idea that we have railroads, the Milwaukee road that has gone bankrupt and a railroad that could, with some expenditure, of course, upgrade their tracks and actually haul the coal out. (Paul B. Smith, DSC-81-T2-49)

Comment: Why is it beyond the BPA's scope to consider transporting this coal to the states that need it? (Joy Lewis, DSC-81-T2L19)

Comment: It is also very sad (actually stupid) that we have one bankrupt railroad (that could ship coal out of state). (Robert Lewis, DSC-81-L35-6)

Comment: I think another thing that concerns us in Montana is why do we have to build these transmission lines?...we had a railroad running through here that that coal should have been shipped to the Coast on. You could have had the plants out there where it is going to be used and the tax base wouldn't have been lost in this area. (Joe Brand, DSC-81-T1-69)

Comment: ...if we do need all this electricity and if they need it in the Pacific Northwest, let's use the existing railways and transport coal through Montana instead of putting power lines across us. (Nancy Daniels, DSC-81-T2-21)

Comment: ...let them ship the coal, the energy that way,... (Arnold Rieder, DSC-81-T2-25)

Response: The alternative of transporting the coal to areas in Washington for generation into electrical energy was addressed in the Montana Department of Natural Resources and Conservation EIS and Colstrip Project EIS. The DNRC and the Federal agencies concluded that the transmission lines were the best means to meet the need.

Comment: Why is it that it's beyond the Department of Energy's scope, of which the BPA is a part of, to consider alternative renewable, nonpolluting energy resources? (Joy Lewis, DSC-81-T2-11)

Comment: I think a good conservation effort could hold off this imaginary need for enough years to possibly replace the power with alternative methods. (Sam Samson, DSC-81-T2-31)

Comment: Why not use conservation and alternative energy resources instead?

The Department of Energy, which is somewhat related to the BPA, has come out with an unpublished report, and it states -- and this is quoting from the Missoulian, an editorial -- that the U.S. could cut energy consumption almost twenty-five percent by the year 2000 without sacrificing economic growth. This is the parent organization. It is saying that we do not need these grand scale centralized systems that BPA says we must have. Something is amiss. (Paul B. Smith, DSC-81-T2-10)

Response: The original Colstrip Project EIS considered alternatives to generation including conservation (see Draft EIS, Colstrip Project, Volume 1, page 1.5-2). BPA has generally supported the need for both conservation and traditional resource development to meet the needs of the region. BPA actively pursues conservation measures with its customers and expects conservation to reduce future load forecasts. However, the expected reduction in load forecasts will not be sufficient to balance expected growth and thus not sufficient to delay the need for the project.

Comment: Why has not more effort been made to seek other alternatives, example, underground lines? This is apparently being done in other countries, why not here? (Judy Hogan, DSC-81-T1-49)

Comment: What is the technical feasibility of burying such lines, and is that an environmentally acceptable practice? (Philip Barrett, DSC-81-L39-14)

Response: BPA does give consideration to placing transmission lines underground in situations where burying a line is shown to be feasible for environmental, economic, or engineering reasons. Underground transmission was an alternative evaluated in the Colstrip Project EIS, Volume 1, pp. 3.7-10 and 3.7-11. Technical feasibility is discussed in Chapter X, pages 10-15 of Appendix B, Draft Role EIS, BPA, 1977. On the basis of this evaluation, underground transmission was not considered to be viable for this project.

Comment: If you had those power plants out on the coast, you wouldn't have that transmission line loss, and those are the people that are going to benefit the most. (Joe Brand, DSC-81-T1-70)

Response: The State of Montana Board of Natural Resources and Conservation approved generating plants 3 and 4 at Colstrip, and MPC's proposed transmission facilities, in 1976. The Montana Supreme Court upheld that decision on September 17, 1979, after a court challenge. The Federal EIS approved a different corridor across Federal lands after consideration of impacts on all types of ownerships.

Comment: What is the status of the plan to eventually convert one side of this double-circuit line to 1100-kV DC? I saw no mention of this possibility in this Draft Supplement. Where would the terminal points of this service be located? Would this service be tapped at any point between the terminal points? (Philip Barrett, DSC-81-L39-13)

Comment: For example, there is no discussion of the possible switch to DC current in this EIS. (Rick Lacey, DSC-81-T1-120)

Response: There are no plans, present or future, to convert the 500-kV line from Colstrip to Garrison from a.c. to d.c. It was not considered feasible, as it would provide a less reliable system for Colstrip Units 3 and 4 than would the proposed two a.c. circuits. The potential for d.c. conversion is part of the Garrison-Spokane section of 500-kV double-circuit line.

Timing of conversion of the latter section to d.c. depends on when additional generation in Eastern Montana and/or Northern Wyoming is developed. A single-circuit d.c. line would be required from the new generation source to Garrison Substation. There it could connect with the convertible side of the 500-kV double-circuit line to the west. A single-circuit d.c. line would then be required from the western terminus of this line section to the load center. The d.c. terminals would

preferably be located at the new generation site at the east end and at the load center on the western end. It is very doubtful that the d.c. line would be tapped between terminals due to high cost.

Comment: I don't understand why there has to be nine routes and all of them passing near people. There is plenty of land available that would allow a route, at least to be analyzed that did not pass near people. This hasn't been done. (Todd Mobray, DSC-81-T1-148)

Response: It would be virtually impossible to locate a transmission line that would be entirely removed from human activities. Physical constraints such as terrain, engineering factors such as structure loading in high ice and snow zones, access to the proposed route and many more determinants figure in the location of a transmission line.

Comment: I am convinced, that this power line can be located in other areas, to minimize the effect on: 1) Residential areas, 2) both prime and potential prime farm land, 3) grazing lands.

...I would like to urge you to take another look at your Corridor Site,...to avoid wherever possible--residential areas, prime farming land, private land,... (Melvin Beck, Powell County Commissioner, DSC-81-L40-1)

Response: There are nine alternate crossings proposed for the Deer Lodge Valley area. Every effort is being made to avoid, where possible, residential areas, prime farming land, and private land. The Draft Supplement indicates that at least some of the alternate corridors do accomplish the objectives you have listed.

Comment: ...it can be put further away from the Kyler ranch than it is. And I would like to go on record saying it should go up higher, up toward the Elkhorns and up in the Muskrat area. I think it can go much higher.

I don't think it needs to come as low as it is there at Rawhide Pond and in through there. (David Rieder, DSC-81-T2-14)

Comment: So, I'd like to see them consider all those things to get them as far away from the problems of not only ranchers but sightseers and hikers and hunters and everyone else as is possible. (David Rieder, DSC-81-T2-14)

Response: BPA has investigated an alternative route further to the northeast than either the Boulder or Basin Alternatives, but the Elkhorn Wilderness Study Area precluded any further action on such an alternative.

Comment: Because the cost of constructing this line will be ultimately passed on the power consumers, I feel that the BPA could, without excess

concern for the cost, establish a route through the Deer Lodge Area among the tree line, outside the visual realm of the residents, and more along the foothills, where there would be less hazard to aircraft and our National Guard. (Carmine Mowbray, DSC-81-L28-3)

Response: It would be virtually impossible to locate a line so that it would be entirely hidden or removed from human activities. However, several other corridors were identified to minimize these impacts.

Comment: ...the Winston Valley. There is already a highway, a major railroad line, and an existing power line on the site approved for it. Thus, you would not be impacting virgin areas ecologically. (Larry Lattin, DSC-81-T2-22a)

Response: The Winston Valley area was considered in the Colstrip EIS. As stated in the Record of Decision dated September 21, 1979, corridors passing through the Winston Valley encountered problems identified within and west of Helena. Segment F (Helena-MacDonald Pass) would cause very high environmental impact; Segments E1, E2, and P (Helena-Avon) would cause more visual impacts, would cross more sensitive land use, and would have greater impacts on population than would the Townsend-Boulder corridor.

Comment: Other than the substation being located at Gold Creek I can see no reason why this line has to cross the valley. Perhaps an alternate substation should be located. (Patrick M. and Carol A. McGillis, DSC-81-T1-14)

Response: Several alternate substation sites have been located, among them Site 1 at Dempsey Creek, Site 2 at Spring Creek, the Hoover Creek Site, the Gold Creek Site, and Pikes Peak Creek. See the discussion of alternative sites in this EIS Supplement.

Comment: In view of the fact that the Colstrip Project EIS was prepared and presented jointly by the Bureau of Land Management, Forest Service and Bonneville Power Administration, and having the observation stated in item number one, is there a conflict of interest existing as concerns the corridors abandoned as unpreferable or not considered in the preparation of the EIS? (Martin Dippold, DSC-81-T1-4)

Response: No. There is not a conflict of interest or relationship between the corridors abandoned as unpreferable or not given further consideration and the EIS being done cooperatively among Federal agencies. The corridors were not studied further or were not preferred because of the total environmental impacts, regardless of land stewardship. Federal lands and private lands were studied equally, without regard to boundaries.

V. PUBLIC INVOLVEMENT

Comment: We've indicated to you that we didn't hear about the initial EIS statement in this valley, we didn't know it applied to us, so we never had a chance to comment on it. We told you that right from the beginning. That's been ignored. (Stuart Lewin, DSC-81-T2-51)

Comment: The actions of the Bonneville Power Administration as recorded in its own correspondence with us clearly demonstrate that citizens' involvement in the process of selecting a corridor placement and lines have been nothing more than perfunctory.

All decisions were made prior to input by local citizens, and current input by local citizens is being ignored. (Stuart Lewin, DSC-81-T2-58)

Comment: Dealing with the question of due process and whether we are actually involved and whether this hearing has any input, I note that on your cover letter to the environmental impact statements....Paragraph three says, "Although the draft supplement states that a preferred federal alternative would not be specified until the final supplement was issued," and I quote, "agency managers have reached accord on a tentative preference for routes in the Boulder and Deer Lodge areas. The Boulder preferred areas" -- and then they go on to list them. We wonder then why the hearing is being made at all if they have already reached their own conclusions. (Stuart Lewin, DSC-81-T2-60)

Comment: My first comment starts on the summary, paragraph three, where it states that, "The issue of the corridor relocation surfaced during public meetings to identify local concerns pertaining to location of a centerline." This statement is entirely false and inaccurate. I was at all of those meetings. From the beginning of the time, we made it quite clear to you that we did not want the power line through this valley, that putting a power line through this valley related to other corridors had not been considered. When you put this statement in your summary, you indicate that the EIS -- the supplemental EIS statement is not dealing with the issues that we presented at that time. This is a demonstration of the lack of due process that is taking place in this proceeding.

You then go on to say, "This issue had not surfaced during earlier public meetings held in conjunction with the Colstrip EIS." We've indicated to you that the reason that this did not surface during earlier public meetings held in conjunction with the Colstrip project EIS was because those of us that lived in this valley were not informed through public notice that we would know about that it was coming through -- possibly through this valley. As a result, obviously we could not comment on prior Colstrip project EIS. And when you then ignore our comments on the supplemental EIS, we wonder where the due process is. (Stuart Lewin, DSC-81-T2-63)

Comment: As a result, under -- on page 1.3 we would like, as point fourteen, you to add that we don't want the corridor here. We would like the supplemental EIS statement to address the issue of whether or not, because of the unique values of the environment here in the Boulder Valley and the Basin area, that the corridor should not be put through here at all, and we would like it compared to the other corridors and a decision made and that addressed in the supplemental EIS statement. If you cannot address that issue in the EIS statement, we would then say that you should withdraw any comments about the fact that we have commented or are involved in this decision-making process, because we are not involved in the decision-making process, and any and all statements in the supplemental EIS that would indicate we are involved in the process are inaccurate and false and we would like them withdrawn. (Stuart Lewin, DSC-81-T2-67)

Response: The identification of a Federally-preferred corridor has resulted from detailed location and environmental studies, as well as from input received from numerous meetings held with local landowners, senators, congressmen, the North Boulder Protective Association (NoBPA), the Deer Lodge Valley Resource Association (DLVRA), local planning commissions, county officials, and other organizations. The identification of a Federal preference in the Draft EIS Supplement was made to inform the public of what these studies and public input have indicated. A final decision will not be made until the decisionmakers (USFS, BLM, and BPA) have reviewed the results of public comments and any additional environmental information identified as a result of the formal EIS review. We are prepared to revise the original selected corridor as a result of these studies and public input.

The issue of the impact of a line through the Boulder and Deer Lodge Valleys was considered as a significant issue in the original Colstrip decision process. However, the impacts had to be balanced against total impacts of the other corridor alternatives. All the corridors affect valleys and other communities. The Federal corridor studies were done systematically by an interdisciplinary team. Months were spent studying in detail the trade-offs involved. The data intensively collected by the State of Montana, by Westinghouse Environmental Systems Department, and by others was updated and considerably expanded by the Colstrip Interagency Study Team. A systematic method was used to analyze the corridor tradeoffs and to identify the alternative of least environmental impact. From this study, the Colstrip EIS, and public comments, as well as from the review of many thousands of pages of State of Montana hearing transcripts, the study team concluded that the overall impacts were lower on the Colstrip-Townsend-Garrison-Hot Springs transmission corridor than on the state-approved corridor.

Comment: ...BPA's failure to directly notify landowners within at least one mile on either side of these proposed alternative corridors is

reprehensible. Such intragency inconsistency must be remedied by immediately notifying those affected landowners of this proposed action and delaying the filing of a Final Supplement until they have had a chance to comment on this project. (Philip Barrett, DSC-81-L39-17)

Response: BPA is continuing to expand its ability to notify landowners affected by proposed and alternative actions. Although landowners within at least one mile of each site of the proposed alternative corridors have not been identified for the Townsend-Garrison alternatives, a substantial list of landowners has been identified by BPA, as well as by local groups such as NoBPA and DLVRA. A number of different media were used to notify the public in the Deer Lodge and Boulder areas of the alternatives involved. BPA is also taking steps to insure that adequate notification is made to landowners during the remaining stages of the process. We do not, however, intend to extend the comment period on the project at this time. The public is offered an opportunity to comment on the final EIS before issuance of a Record of Decision. The Record of Decision cannot be issued until at least 30 days after the final EIS is filed with EPA.

Comment: ...we feel that the short time permitted for public input based on the recent release of the corridor route is unfair and that the final decision on the route should be postponed until all questions are adequately addressed. (Martin Dippold, DSC-81-T1-15)

Comment: Since BPA does feel they are in a time squeeze, will they really take the time to do this hearing process justly? (Gail Peterson, DSC-81-T1-23)

Comment: Why is it necessary for BPA to use such pressure tactics as we don't have time to waste, we must hurry up so that these lines can be ready. The proposed substation site at Gold Creek and proposed corridors leading to it have only surfaced recently, and we, of this area, have been afforded very little opportunity to offer input. (Judy Hogan, DSC-81-T1-45)

Comment: First of all, we are opposed to only government agencies being involved in the writing of the EIS Statement. It seems to us it would be much more effective to have some input from the private citizens. (John and Carole Hollenback, DSC-81-T1-L4)

Comment: And I think the meeting of this kind with this number of people showing up certainly demands some consideration,... I feel like we really are kind of useless coming here stating our cause in view of the fact that we are stating it before the people that are setting them up. I don't think we are being heard by the right people. (Frank Shaw, DSC-81-T1-97)

Comment: Surveys have already been made through our valley before the approval of this EIS to the east of us...This implies that no contact or discussion was ever intended on a systematic basis. (Rick Lacey, DSC-81-T1-114-116)

Comment: Letters were supposed to have been sent to us as landholders, and we were told that several hundred, maybe several thousand letters were sent out. This was made by a statement by a BPA official in Missoula. When I attended a meeting here in Deer Lodge last year, I asked about these letters. Well, the letters were sent to landowners and I said I was not given a letter. I asked how many of those present were sent a letter. There was no indication. (Rick Lacey, DSC-81-T1-117)

Comment: And in our judgment the decision did not reflect the advice and counsel of the valley people...

We firmly believe that to have been adequately informed each affected landowner should have received notification in the mail of the possibility of being situated in a power corridor. Instead, Bonneville relied on notices and local newspapers to inform area residents about the upcoming public hearings. But even these notices were insufficient in providing us with the information we needed to take part in the decisionmaking process. The notices that appeared in a local daily paper, the Montana Standard, did little to alert valley residents to the impending power line.

...we are now faced with the dilemma of possibly having a double-circuit 500-kV line constructed in our valley. An impact that will affect us the rest of our lives, and we seriously doubt that our rights as landowners were sidestepped by Bonneville inadvertently. (Toni Kelley, DSC-81-T1-106-111)

Comment: Being a landowner that's positively affected by this situation that I have never been informed, contacted or anything to this effect on the effects of my property by the Bonneville Power Association. I would just like to make it a matter of the record that I have not been afforded the opportunity to comment in any way on this situation and I would like to reserve the right to comment in the future for my own protection. (Burton G. Kinyon, DSC-81-T1-142))

Comment: ...the fact that we are here giving input into a supplemental EIS which has already been written makes me wonder why we weren't here giving input into the original EIS.

We feel that we were not included except at the eleventh hour,...And so we have to go back to that idea that we should have been in on the input from the very beginning. (David Rieder, DSC-81-T2-13)

Comment: ...we were never informed that we were being involved....all of a sudden it comes right down to the Bonneville Power, the Forest Service and the BLM had decided we're going right through my ranch and right through the valley. And we never got any chance. Nobody ever talked about this. We never had any hearings on it, and I don't know if this is the first hearing or the last hearing or the only hearing. (Don Larson, DSC-81-T1-4)

Comment: Not once in the last four years have any of those people come to me personally and said, "Larry, how do you feel about this thing. You know, what's it going to do to your ranch? What's it going to do to your carrying capacity?" Not a single one has ever come to me and said, "We're thinking about this power line across our grounds. How do you feel about it, because obviously if it goes across the power grounds it's going to go across your grounds." And I don't think this is right. (Larry Lattin, DSC-81-T2-23)

Comment: Page 1.7, second paragraph, you say, "A tentative corridor location has been identified which originates near Boulder and proceeds in a fairly straight line to near Garrison. Such a corridor has been suggested by BPA and the DLVRA."

We're not aware of this, that this was our recommendation. We'd like this statement removed as being inaccurate. We don't think that you have considered alternatives to the various alternative lines you have. We have not commented on what the various alternatives ought to be through this valley. (Stuart Lewin, DSC-81-T2-70)

Comment: Going to page 1.1, second paragraph, we would indicate that, again, we were not involved in the initial corridor selection. Our due process has been denied as a result of this, and, therefore, this supplemental statement is supplementing something that we've had no right to comment upon and no ability to comment upon. (Stuart Lewin, DSC-81-T2-65)

Comment: The residents of our community were not given proper notice of the original hearings. I believe now that this was intentional in order to slide through the necessary environmental steps to satisfy impact statements and keep us out of the matter as much as possible. (Sam Samson, DSC-81-T2-34)

Comment: Several instances of subtle and blatant misrepresentations by BPA. On page 1 of Summary and 1-2, the implication that BPA did a thorough job of the "public meeting" step. They did not! The Basin, Boulder area never had any public meetings or legal, public notice of meetings in Jefferson County newspaper, prior to the final decision on the designated corridor. (Debbie Sheehan, DSC-81-T2L20)

Comment: This powerline was decided on without the input of the people who it is going to affect. Who are these "beaurabrats" to decide? Do they have degrees in powerline location? (Lewis, DSC-81-L-2)

Response: BPA feels it has given the public adequate opportunity and time to comment on the draft supplement and to discuss line location with its location engineers. We also feel the public meeting notification was adequate. As an example of the effort that has been expended, there have been 24 meetings held in the Boulder-Deer Lodge area to obtain public input. Many of these meetings were organized by the affected landowners. In addition, BPA has worked to obtain the names of landowners involved on affected corridors. Names were also provided by the DLVRA and the NoBPA. BPA recently initiated a monthly newsletter which is distributed to inform people of the current status of BPA activities in the Townsend-Garrison, Drummond and Missoula areas. An office has been opened in Missoula with staff available to answer questions and carry out a public involvement program. News releases were published two weeks prior to the meeting, in the Boulder Monitor, the Silver State Post, the Montana Standard, and the Independent Record. News releases were also provided to KXLF Radio.

Based on this evidence and on the continuing meetings, it cannot accurately be said that BPA has not made an effort to involve and inform the public in the Boulder and Deer Lodge areas of the alternatives being studied and to obtain their input in making the final corridor decision. We realize that the schedule for the project is tight. However, its importance to the energy users of Montana and of the entire Northwest has required that the best analysis of alternatives and public input be completed in the time available. That has meant extra effort not only by BPA, USFS, and BLM staff, but also by the public.

Comment: We would request that when the EIS statement has been revised and is more particular, and in fact when the entire environmental impact statement has been revised and is more particular, that there be another public comment period so that we can then look at the facts of the statement itself and give you proper comments. (Stuart Lewin, DSC-81-T2-62)

Response: The Federal agencies do not intend to provide another formal comment period on the project at this time. The public may comment at any time before issuance of the Record of Decision. The Record of Decision cannot be issued until at least 30 days after EPA's notice of availability is published in the Federal Register.

Comment: We would request another hearing on the EIS statement and on the supplemental EIS statement once it's been corrected. (Stuart Lewin, DSC-81-T2-85)

Response: CEQ Regulations provided that public meetings may be held to obtain comments on draft EIS before completion of the EIS as a final. Those meetings were held in Deer Lodge and Boulder in March. Close of comments occurred on April 20, 1981. We feel that the public was given every opportunity to comment on the EIS and the corridors involved. Over 600 copies of the EIS supplement were mailed to property owners and concerned citizens. Notices of the meetings were sent to and published by local newspapers. Notices were also mailed to property owners. We do not intend to reopen hearings on the Colstrip EIS. The purpose of this EIS is to study alternative locations for the designated Townsend-Garrison corridor and substation site in order to determine the alternative with least environmental impact. BPA will continue to meet with concerned landowners to identify and refine centerline locations and substation sites.

Comment: On page 5-6 a blatant implication that our resistance to these power lines comes from Northern Plains Resource Council. Not true! We were already angry and upset at BPA because of their attitude, their treatment of our concerns and their blatant lies. (Debbie Sheehan, DSC-81-T2L20-2)

Comment: As an individual I feel I must speak to the last paragraph on page 5-6 of the EIS. Rural residents of Montana have not traditionally been amenable to transmission lines, pipe lines, highways and so forth crossing their lands.

I also object to the sentence quote "Meetings to discuss the impacts of 500-kV lines have been attended by representatives of Northern Plains Resource Counsel," unquote with the following sentence of quote "Local opposition to the location of the transmission system facilities has materialized," unquote.

There are so many fallacies in this paragraph on page 5-6 that I feel it should be struck from the final EIS. (Gail Peterson, DSC-81-T1-25)

Comment: We take issue with a statement in the Supplement, page 5-6, which states that rural residents have accepted transmission lines during industrial progress. This is not correct. (Melvin Beck, DSC-81-T1-60)

Response: The subject paragraph was adapted from the Colstrip Project EIS Volume 1, page 3.1-38, paragraph 5.

No implication was intended that Northern Plains Resource Council was spearheading any opposition. The exact timing and sequence of any opposition is rather vague.

The subject paragraph has been deleted.

Comment: The fact that this is called the Townsend to Garrison substation in itself is very misleading considering the fact that the substation site goes well beyond anything that could be considered part of the Garrison area. Is this meant to confuse us and other concerned groups further down the line? (Judy Hogan, DSC-81-T1-48)

Response: The Garrison Substation was given a preliminary name in the Colstrip Project EIS, based on the most significant nearby geographical feature. The location for a substation with interties to Montana Power and BPA 230-kV transmission lines was at the intersection of these corridors in the vicinity of Garrison.

Since that EIS was prepared, additional substation sites have been proposed and studied. To provide continuity to the concept of the intertie of electric systems in the Garrison area, the term Garrison Substation has been retained.

VI. SOCIO-ECONOMIC

Comment: The BPA has failed to adequately assess the true costs of various options for the route location and line construction. NEPA requires a cost-benefit analysis including direct and indirect costs, environmental costs, and short- and long-term costs. The draft supplement does not remedy the failure of the draft EIS to consider these impacts. A cost-benefit analysis that fails to consider the impacts of tax loss to counties and the state is inaccurate and misleading. (Robert L. Deschamps III, Missoula County Attorney, DSC-81-L34-8)

Response: Because the cost/benefit analysis which attempts to put dollars on environmental factors fails to recognize the true intrinsic and extrinsic values of our natural and cultural resources, BPA does not follow the traditional form of such analysis normally done by the Corps of Engineers and the Bureau of Reclamation. Environmental impact statements must present a more accurate evaluation of the impacts on such resources for consideration along with engineering and economic factors by the decisionmaker.

BPA does complete an economic and engineering evaluation of alternative locations. Construction costs and electrical losses are presented in Tables 4 and 9 of the EIS Supplement, along with Environmental and Jurisdictional factors. The evaluation criteria for the substation sites is presented in Table 10. These tables have been updated with the latest information and in response to public comments. Your comment on impacts of tax loss is answered by the next response.

Comment: Your discussion of economic impacts should indicate how much tax revenue would have been paid to the state and the involved counties

if the planned facilities had been built by private utilities, as the state presumed in granting the Colstrip Project its Certificate under MFSA. (Philip Barrett, DSC-81-L39-3)

Response: The figures for tax revenue that would have been paid had a private utility built this transmission line on the state-approved corridor were given in the Montana DNRC DEIS (Volume Four, page 233) and the Colstrip Project EIS (Volume 1, pages 3.2-55 and 56).

The counties will not "lose" any tax revenue because BPA builds this line. The counties will forego additional tax revenue that would have been paid had these facilities been built by MPC.

Using rough county-wide average mill rates, which vary by school district within each county and are generally highest in cities or towns (which this line would not cross), and keeping in mind that these revenue estimates may therefore be somewhat high, the following figures reflect the revenues which would accrue to the counties if a private utility were to build the Townsend-Garrison Substation line:

<u>County</u>	<u>Approximate Mill Rate 1979-80</u>	<u>Approximate Miles of BPA Line</u>	<u>Annual Revenue per Mile of Line</u>	<u>Total Annual Revenue Total</u>
Broadwater	175	17	\$13,293	\$225,981
Jefferson	210	43	\$15,952	\$685,936
Powell	150	33.5	\$11,394	\$381,699

Those figures include levies for the state school foundation program, the state university system plus county roads, city planning, sewers, etc. For a more detailed discussion, see Colstrip Project EIS (Volume 1, pp. 3.2-55 and 3.2-56).

Comment: Will there be a loss of tax base and what provisions will be made to assure adequate property tax relief to compensate the districts for tax base removal from the tax rolls and converted to public property? (Martin Dippold, DSC-81-T1-8)

Comment: We are very concerned about the impact of proposed Substation Site 3 and power line will have on our tax base. (Judy Hogan, DSC-81-T1-39)

Comment: With the Bonneville power line coming through...there will be no tax revenue....It's going across our land at our expense, and I feel that very much that Bonneville should be paying taxes equal to private landowners in our county....If this power line were kept on the public lands, that the tax impact to our local government would not be as severe. But once you put these power lines on private lands, I feel that

you should pay an equal or if not more than what, for the nuisance value that the power lines will generate when they go through the private lands. (Tom Beck, DSC-81-T1-74-79)

Comment: We would like to see them pay taxes or pay in lieu of taxes. We do need some money out of these lines. (Don Larson, DSC-81-T2-7)

Comment: Will the BPA seek authorization from congress to make payments in lieu of taxes based on those amounts? (Philip Barrett, DSC-81-L39-4)

Comment: Behind closed doors we hear there's going to be no taxes because Montana Power probably had no question of building that in the first place. They pulled a fast one. (David Rieder, DSC-81-T2-18)

Comment: I just am a firm believer that this line should be taxed if it goes in, in some way or another, either in lieu of taxes like the Forest Service pays to the county. This is not really a large amount, but yet as far as our county's concerned it's very helpful in maintaining the roads and keeping up various public things in the county. And I think that something like this could be worked out that would be beneficial to all of us, or at least take some of the hurt out of this thing going through. (Burton L. Cooper, DSC-81-T2-38)

Comment: There is a reference to impact payments, and again no statement as to how these will be determined and what amounts will be determined. As a result, we cannot comment on whether or not we would find these impact payments to be satisfactory in lieu of losing the normal taxes; therefore, we find the EIS statement on this particular point again to be vague. Six, no company or agency should be allowed to build these lines unless they are willing to pay state and local taxes. The discussion that taxes will be paid or moneys will be paid in lieu of taxes is too vague for us to comment upon. There's been no statement as to the amounts and how this will be determined. Impact moneys will not be satisfactory.

Moving to page 1.4, point number five on that page, you say, "At the present time the BPA does not have legislative authority to pay taxes for its facilities. The Pacific Northwest Electric Power Planning and Conservation Act does provide for impact payments to local government units." Here is an example of the vagaries of this EIS statement. What does that mean? How are we to comment on how much that's going to bring to the coffers of Jefferson County? We can't tell. The EIS statement should direct itself directly to how much money that is. Then we'll tell you whether we think it's right or not. How can we tell? (Stuart Lewin, DSC-81-T2-57)

Comment: School District 33 is highly concerned about the loss of tax revenue. (School District 33, DSC-81-T1-L3-3)

Comment: We are concerned that we will have to live with the power line, both scenic and whatever harmful effects it might cause, and will not receive any benefits tax wise to our county. This does not seem like justice to us. (John and Carole Hollenback, DSC-81-T1-L4-3)

Comment: If BPA builds the proposed line, payment in lieu of taxes should be made every year to counties and the state. The amount should equal the property taxes that would be generated if the line were built by private companies. (Robert L. Deschamps III, Missoula County Attorney, DSC-81-L34-3)

Response: As a Federal agency, BPA pays no taxes to State or local governments. Congress could authorize in-lieu-of-tax payments, but has not done so. There is a provision in the Regional Act for "impact aid payments" based on services provided the Administration. These are not in-lieu-of-tax payments but payments for impacts on local government services. Example: If a county must build a new facility, such as a road or school, as a direct consequence of a BPA action, BPA may help overcome the burden with payments. BPA does not foresee the need for such local government expenditures as a consequence of this project. The method for computing "impact aid payments" must be approved by the Federal Energy Regulatory Commission. Payments under this provision begin the first fiscal year following adoption of a plan by the Regional Council.

Comment: Your analysis should of course include the tax consequences of depreciation of property adjacent to the right-of-way. (Philip Barrett, DSC-81-L39-5)

Response: The landowner should contact the tax assessor, to obtain accurate information regarding tax consequences of property devaluation.

Comment: The sale value (of the ranch) would be nothing!! (Donna Gilman, DSC-81-T1L18-8)

Comment: What will happen to our property values? We find it very difficult to believe that real estate values will not be adversely affected. (Judy Hogan, DSC-81-T1-40)

Comment: Railroads and power lines and some of the other things have seriously obstructed the value of the land and the desirability of people to come and settle here.

I think the biggest factor in appraising real estate that gives it its value is the desirability of it, what you see when you look out your front window or stand on your front porch affects the desirability of

where you live, and certainly towers as high as the balloons floating in Deer Lodge today would affect the desirability if it was very close to you. It could affect the desirability of the valley.

So whatever happens the power line going through this valley is going to affect everybody's property that is here to some degree, and the closer you are to it and the more access there is to it, the more it's going to affect your land. (Frank Shaw, DSC-81-T1-91)

Comment: Does BPA intend to compensate landowners adjacent to the right-of-way for the depreciation of their property resulting from the construction of this line and the establishment of a new major transmission corridor? (Philip Barrett, DSC-81-L39-6)

Comment: The devaluation of property are of great concern to us, our neighbors and the community....The following are not addressed in the Draft Supplement: compensation to the landowner. (Ron and Lynn Cunningham, DSC-81-T1L13-2)

Response: Studies on the effect of transmission lines on property values disagree as to whether the presence of the line reduces property values. Some indicate that property values are not noticeably affected. However, effects vary widely for different types of land crossed and impacts can vary for individual pieces of property in a single land use category. In general, the effect on property values depends on the type of land use near the line, on the intrinsic value an individual landowner attaches to the characteristics of his or her land, and on the changes made by the transmission line and right-of-way. Thus, an analysis of each individual case would be necessary to predict changes in property values for a particular line, as the effects are unevenly distributed (Role EIS, Draft Appendix B, Ch. VIII).

Property owners are compensated for any reductions in the value of their land which occur as a result of the right-of-way easement agreement they enter into with BPA. Compensation is based upon the difference between the fair market value of the property before and after to the establishment of the right-of-way. These market values are determined in appraisals made by experienced BPA or independent real estate appraisers. Each estimate is examined by a review appraiser to ensure that it is written in accordance with the "Uniform Appraisal Standards for Federal Land Acquisitions" (Interagency Land Acquisition Conference 1973). Each appraisal must be supported by recently consummated comparable sales in the area which are compared with the property being evaluated.

It is recognized that, in some instances, the imposition of a transmission line right-of-way may so adversely affect a particular

parcel of land as to leave the owner with an uneconomic unit. BPA's appraisers are alert to possible damage to portions of the ownership exterior to the transmission line easement.

Each property is evaluated and considered individually in arriving at a figure for just compensation to affected property owners. If the affected property owner voluntarily sells the land or an easement to it, there is prima facie evidence that he is satisfied. If a settlement must be reached in the courts, the courts will adequately compensate the owner for any fair market value loss.

Comment: The second aspect of the tax problem is that lands within and adjacent to the right-of-way will be devalued because of the limitations on their use.

BPA policy has been to compensate landowners for diminution in value of land only within the right-of-way, not for devaluation of adjacent lands. This policy would be especially harmful where the right-of-way width results in electric and magnetic fields and noise levels that prohibit full use and enjoyment of lands outside the right-of-way. This becomes a taking of private property without due process or just compensation. The property owners and the counties are affected adversely by this policy. The present BPA policy must be revised to provide compensation to adjacent landowners whose property rights are diminished as a result of the transmission line. (Missoula County Attorney, DSC-81-L34-4)

Response: Appraisals prepared for the Bonneville Power Administration, as for any other Federal Agency, must be prepared in accordance with "Uniform Appraisal Standards for Federal Land Acquisitions". Federal law prohibits any consideration of Just Compensation for consequential damages to adjoining ownerships.

Comment: School District 33 is highly concerned...that the transient construction population would have an adverse impact on the Districts Budgeting. (DSC-81-T1-L3-4)

Response: There will be minimal, if any, adverse impacts to the school district's budget. The peak of the construction season work force will number 150 to 200 people doing a variety of jobs at a variety of locations along the line (BPA will have 3 separate contracts, each about 30 miles in length). Most workers do not travel with their families, but use temporary housing (such as travel trailers) and return to their "home base" on weekends. The workers are not in one spot very long but follow the work. Also, the peak of construction is expected to be during the summers of 1982 and 1983, when most children will not be in school.

Comment: Your analysis of the social and economic impacts is definitely deficient. A substantial portion of the local economy is based upon persons who utilize the so-called "health mines" in the vicinity of Boulder and Basin. It is unlikely that any of them would utilize the mines in the vicinity of the powerline corridor.

The damage and destruction which will be caused to the deer and elk herds in this area will further have a direct socio-economic impact upon the local economies, as revenues from activities associated with hunting (a major recreational activity in this area) will be greatly diminished. (Richard J. Llewellyn, DSC-81-L43-13 and 17)

Comment: Basically we are opposed and wish you to cease and desist from all plans, surveys, and/or construction which would bring the power lines through the Boulder Valley and its adjoining private federal and state lands for the following reasons: One, the Boulder valley and the adjoining mountain areas comprising the Elkhorn Wilderness Study Area constitute a unique...health and recreational area, and two, due to the unique nature of this area, there is no satisfactory placement of the proposed Bonneville Power Administration's transmission lines through this area without seriously compromising and destroying the unique...commercial, recreational...attributes and the balance of this area.

...many individuals travel from all over the world to use the health mines and the Hot Springs in this area to improve their general health. Building these transmission lines through this area would seriously and adversely affect the commercial wellbeing of these enterprises and further substantially erode economic activity...

...We feel that putting a power line through this area would adversely affect these and, as a result, negatively impact upon us and our livelihood in this valley,... (Stuart Lewin, DSC-81-T2-78, 54, 56)

Response: The proposed major transmission line crossing the Elkhorn Mountains and passing along the east edge of the Boulder Valley would represent a new level of man's influence in the Boulder Valley.

The transmission line would be fully visible from the town of Boulder as it descends from near Half Moon Park toward McCarthy Creek. The clearing and the access roads to the towers would also be visible in the area. From McCarthy Creek to Comet Mine and Mt. Thompson, portions of the transmission line would be discernible. The tops of some towers in the Half Moon Park area, as well as portions of the line west of the freeway, may be visible from Boulder Hot Springs. The transmission lines in these areas would be four to seven miles away.

The visual impact of the line will be lessened with the use of non-reflective conductors and darkened towers. The clearing of the right-of-way will be done so as to blend it into the natural background of forest mixed with grassy openings. The right-of-way, oblique to the line of vision from Boulder Hot Springs, will also be partially screened by adjacent timbered areas.

Boulder is economically dependent upon the State Boulder River School and Hospital and on tourism. The State School, located south and east of Boulder, should continue to maintain much of the present economy. However, there have been recent efforts in the state legislature to relocate the school facilities throughout the state. Should this occur, the local economy may become more dependent upon tourism.

Tourism in the area focuses primarily on the health mines, historical attractions, and outdoor recreation. There are several historic features in the Boulder Valley; the most prominent is the Jefferson County Courthouse, designated as a National Historic Site. The Boulder Hot Springs, two and one-half miles south and east of the town of Boulder, is also on the National Historic Site Register.

Given this dependence on tourism, any change in economic activity caused by the transmission line would be somewhat dependent upon the primary reason tourists are in the Boulder area. It is likely that those travelling to the Boulder-Basin area primarily to visit the health mines, Boulder Hot Springs, or specific historic sites will continue to visit the area. While there are a number of hot springs, resorts, or spas in western Montana, these hot springs are some distance from the Boulder Valley and surrounding population centers. With the increasing cost of fuel, tourists close to the Boulder Hot Springs and health mines can be expected to continue their visits.

For those visiting the Boulder-Basin area for a general historical or wilderness experience, with the specific historic sites or spas only a secondary attraction, the transmission lines may have a negative influence on their decision to visit or return to the area. For this reason, after construction of the transmission lines an undetermined number of individuals may be likely to discontinue their visits.

The Elkhorn Mountains, supporting an elk herd estimated to be about 600 animals in 1975, are increasingly used for hunting recreation. Photography and viewing of the elk and deer also occurs in the area. The presence of the transmission line is not expected to have much effect upon the hunting recreation, unless there is a decrease in herd numbers. Because hunters and photographers usually are willing to travel for some distance to their recreation sites, a decrease in the Elkhorn Mountains elk herd for any reason could cause them to travel to an alternate hunting or viewing site. This would be accompanied by a decrease in

associated economic activity. Likewise, an improvement in hunting or viewing of elk herds elsewhere could result in hunters choosing to go there.

It is difficult to determine the exact effect of the transmission line upon the commercial activities in the Boulder Valley. Outside factors such as the increasing cost of fuel and the associated costs for travel may decrease tourist and recreational pursuits in general. Helena continues to expand south along the freeway. The State is awarding contracts to complete construction of the freeway between Butte and Helena. These factors may help to improve the tourist and recreational aspects in the Elkhorn Mountains and Boulder Valley for those seeking close-in recreation. The increase in irrigation systems may benefit the area economically, but could alter the character of the valley around Boulder.

The esthetic changes accompanying construction of the transmission line could cause some economic impacts. Any commercial enterprise in the Boulder Valley totally dependent upon the esthetic character of the valley as it now exists will suffer an economic loss. However, the tourist activities of the Boulder valley (historic district, health spa, health mines) tend to have characteristics that draw tourists for reasons other than a "natural" surrounding. This will tend to minimize the detrimental economic impacts.

Comment: Who would be interested in fishing there when the high voltage line would be 100 ft. from the waters edge? (Donna Gilman, DSC-81-T1L18-5)

Response: In the event that the marketability of fishing rights in privately owned ponds near the transmission lines is adversely affected, the landowner will be reimbursed for such loss.

Comment: Who would be apt to rent such a place with the probability of a health hazard? (Donna Gilman, DSC-81-T1-L18-4)

Response: As discussed in Appendix C of the Draft Supplement, no adverse health effects are expected as a result of this transmission line. Any impact on the rental houses would be reflected in the difference between rental rates of houses not influenced by the presence of transmission lines and houses in the vicinity of transmission lines. The difference in rental rates would be capitalized into value. Appropriate compensation would be provided.

Comment: I can't see how in God's name your engineering department could state that they come across these mountain ranges as cheap as they come up the Winston Valley. There's no way. I'm not an engineer, but it just

makes good sense to me realizing that you come up a valley floor a whole lot cheaper than you could come across a mountain range. (Larry Lattin, DSC-81-T2-22)

Response: The main factor affecting cost of a transmission line is generally line length, not terrain, though it is true that you probably could build in the Winston Valley cheaper than the mountains around Boulder--were cost of the line the only consideration.

The Townsend-Boulder corridor, however, was not selected on the basis of cost of construction in any one area over another. It was selected as the environmentally preferred corridor because it had less visual impact, avoided sensitive land use and population impacts in the Helena vicinity, and best met the electrical system needs, without regards to specific jurisdiction.

Comment: ...this power will be at a lower rate on BPA lines, but the residents of Powell County will not see a lowering of their rates, for the simple reason, they still have to get their power from a private power company. (Tom Beck, DSC-81-L40-5)

Response: The residential consumers in Montana do receive some benefits from the Federal Columbia River Power System. In addition to serving preference customers, BPA reserves 221 average MW to serve the state of Montana. Furthermore, under the Regional Power Act enacted in December 1980, the residential and small farm consumers of investor-owned utilities in BPA's service area will benefit from the lower rates of the Federal system, if the utilities enter into residential exchange contracts. See correspondence from Montana Power Company in Appendix G of this Supplement, for further discussion.

VII. MITIGATION

Comment: Under issues identified during scoping, the following are listed but not addressed in the Draft Supplement: construction and mitigation practices. (Leo Berry, DSC-81-L32-8)

Response: Mitigation and construction practices are discussed in the Mitigation section of the Final EIS Supplement.

Comment: What guarantees of the following,that one year after construction, anything would be done about silting of Basin Creek (or any other creek). (Debbie Sheehan, DSC-81-T2L20)

Comment: Will BPA take responsibility for my having to truck water at least one mile because they have silted and muddied my drinking/living water Basin Creek? (Char Webb, DSC-81-T2L21)

Response: The following measures, listed under Mitigation, Colstrip Project EIS Volume 2, apply to stream courses directly.

3. Filter strips (areas with continuous vegetative cover and undisturbed soil) should be left along all identifiable stream channels. Filter strips should be a minimum of 100 feet wide, except they should be 200 feet wide in the M₈ and P₃ Land Suitability Mapping Units and in all mapping units where slope gradients exceed 60 percent. Adjustments to the above recommended widths can be made as warranted by local topography, soil stability, and stream value.
11. Every effort should be made to avoid road crossings on flowing streams. Where crossing identifiable stream channels cannot be avoided, bridges or culverts should be used. Temporary crossings of perennial streams should be made with temporary bridges rather than culverts.
15. Logs should not be yarded through identifiable stream channels. Intermittent streams with resistant channels and in flat terrain are an exception.
16. Trees should not be felled into any perennial stream channel. If debris becomes deposited in perennial stream channels, it should be removed immediately. Debris that becomes deposited in intermittent channels should be removed before the streams are likely to flow again.
17. If, for some reason, a stream channel must be cleaned, cleaning should be done by hand rather than by machine to avoid disrupting the stream bottom.
32. Blasting should not be allowed in or so near a stream that it becomes contaminated with excavated material.
34. Excavated material should not be disposed of in stream floodplains.
35. Transmission facilities should not be located in floodplains. Where floodplains are so wide that they cannot be spanned and transmission towers must be located in them, the towers should be constructed to withstand a flood of 100-year frequency. (BPA now requires a floodplain analysis, wherever location in a floodplain is unavoidable.)

46. When crossing streams, precautions must be taken to avoid altering any stream course that would effectively destroy the existing riparian vegetation type that many forms of wildlife, as well as livestock, are dependent on during at least part of the year. Stream channels should be crossed at near perpendicular angles, where towers can be set back from stream channels.

Many other measures refer to erosion and soil loss, which would eventually affect stream courses.

The proposed crossing of Basin Creek lies within an area requiring a 100-foot wide filter strip of continuous vegetation and undisturbed soil. These measures aim to prevent any damage to stream courses. There are no contract clauses which deal with this problem, but they will be added to this contract because it is listed in the mitigation measures.

If damage to a water supply occurs as a result of BPA's activities, corrective measures will be undertaken.

If damage occurs because of a contractor's negligence, the contractor will be required to correct the damage.

Comment: What guarantees of the following...that staging areas will be restored. (Debbie Sheehan, DSC-81-T2L20)

Response: The following mitigation measures from the Colstrip Project EIS (Appendix A.3.3.3, Volume 2, pages 2-4) specifically mention staging areas.

6. Because of the severe erosion and sediment risk hazards in Land Suitability Units M₈ and P₃ (TER), road grades in these units should be held to less than 8 percent. Unless otherwise agreed upon by the appropriate land manager, all roads, staging areas, and concrete batch plant sites in these units should be surfaced with crushed rock or other comparable erosion-preventing material, and roads should be supplied with culverts at all natural drainage channels to avoid concentrating water from several watersheds. Sediment control structures should be installed where deemed necessary by the appropriate land manager.
8. Following primary use, staging areas, concrete batch sites, temporary and intermittent-use road surfaces, and other temporary-use areas should be closed, ripped (or otherwise loosened), and seeded. Seeding mixtures and appropriate soil amendments should be agreed upon with the land manager.

23. Particular care should be exercised in locating concrete batch plant sites and staging areas. These are high-use areas requiring soils with low hazards of erosion and dust and with high bearing strength and good trafficability.
31. Unless otherwise agreed upon by the appropriate land manager, the original contour of the ground should be restored when reclaiming temporary roads, staging areas, batch plant sites, and other temporary use areas. Immediately fill or level ruts after construction ends. If left unaltered, these ruts on sloping land will act as erosion paths for accumulated water during rainfall or snowmelt. Also, plowing or deep tillage of the compacted area as soon as possible will aid its productivity.

Many other clauses also apply but do not specifically mention staging areas. The complete list of mitigating measures will be reprinted and is available upon request.

Comment: We need assurances that this line is not going to be hazardous or harmful to our health. There should be no problem to put in the contract and sign it up for us that anything that happens in the future which is hazardous to our health in any way, that we will not only receive indemnity for it and payment for it but that the lines be torn down as well. (David Rieder, DSC-81-T2-17)

Comment: BPA has no provision for written or verbal agreement to take responsibility for future problems arising....BPA has no provision for possible future economic impact to the individual such as less tourism, more difficult hunting, difficulties in breeding livestock, etc. (Char Webb, DSC-81-T2L21)

Comment: ...we'd like to also have a guarantee that they will pay for any and all future damages to the people and the country that they're going through. (Don Larson, DSC-81-T2-9)

Response: BPA has no authority to offer assurances that it will compensate an individual for perceived discomfort or problems that may arise in the future. Neither does BPA have authority to guarantee a money payment for damages. No assurance can be given that the construction of transmission facilities will not have some effect or impact in the future. Compensation is determined and paid for land and rights-of-way on the basis of existing knowledge. Compensation is also paid for damages which occur as a result of construction practices.

The effects of the transmission facility, as presently known, are well identified in Appendix C of the Final Supplement and on pages 3.2-59 through 3.2-62 in the Draft Colstrip Project EIS, Volume 1. See also the response to other comments regarding health effects in this section.

Comment: Will anyone receive impact payments and who judges impact worthy of payment? (Debbie Sheehan, DSC-81-T2L20)

Comment: BPA has no way of measuring or reimbursing us for losses of such intangibles as, peace of mind, happiness with the earth in its natural etc. (Char Webb, DSL-81-T2L21)

Response: As a Federal bureau, BPA pays no taxes to state or local governments. Congress could authorize in-lieu-of-tax payments, but has not done so. There is a provision in the Pacific Northwest Electric Power Planning and Conservation Act for "impact aid payments" based on services provided the Administration, but these are not in-lieu-of-tax payments; they are designed to compensate for impacts to local government services. The method for computing "impact aid payments" will not be completed until approved by the Federal Energy Regulatory Commission. Under this provision, payments would begin the first fiscal year after the Regional Plan has been adopted by the Regional Council.

Comment: Any disturbance to wildlife, can be compensated for, by planting a vegetative covering without interfering with the power line. (Tom Beck, DSC-81-L40-3)

Response: An effort will be made to retain the maximum amount of vegetative cover during construction of the transmission line. Additional measures to reduce impacts to wildlife will be considered during location of the centerline.

Comment: Item 2 - It is not clear what type of monitoring is to be accomplished, by whom, or for what purpose. It may be better to strengthen item 1 and drop item 2. (Thomas Coston, DSC-81-L41-3)
(Commentor is referring to wildlife studies discussed in Colstrip Supplement, p. 2-2)

Response: Mitigation measures 1 and 2 are both necessary. A final decision on funding a study such as Dr. Picton's proposal has not yet been made, so exact information on scope and source is not yet available. This proposal is being given further consideration as part of the overall project monitoring program. More information on Dr. Picton's study can be found in the Mitigation section of the EIS Supplement.

Item 2 is to be done whether or not Item 1 is undertaken. The purpose is to determine where the animals are, and whether human activities are bothering the animals as they use their traditional wintering and calving grounds. If the animals are being bothered, measures must be taken to eliminate the problem.

Comment: We think that this mitigation section is woefully inadequate and does not cover the needs, the unique needs of this valley, and is simply perfunctory. (Stuart Lewin, DSC-81-T2-73)

Response: The mitigation measures listed on page 2.2 of the Draft Supplement are intended to supplement those mitigation measures listed on pages 3.3-1 through 3.3-3 of Volume 1 and Appendix A3.3.3 of Volume 2, of the Draft Colstrip Project EIS. The mitigation measures listed on pages VIII-1 through VIII-21 of the Colstrip Transmission Environmental Report (TER) are also applicable and were included in the Colstrip Project EIS as Appendix A3.3.3. Chapter VIII of the Appendix of the BPA's Role EIS, titled Mitigation Measures Undertaken in Transmission Facility Construction, Operation, and Maintenance is also applicable. The complete list of mitigating measures has been reprinted, and is available upon request.

Additional, site-specific mitigation measures will be developed for the centerline location.

Comment: I recommend adding the following mitigation measures:

- 1) Raptor roosting and nesting platforms should be installed along the transmission line, as identified in the centerline environmental analysis.
- 2) Large orange markers used for identification of transmission lines to low level aircraft are needed from Cataract Creek to Thunderbolt Creek, as determined in the centerline environmental analysis. (Dean Graham, DSC-81-L44-1-2)

Response: Your comments are appreciated and will be considered during the preparation of the centerline environmental analysis. See Mitigation Measures in Environmental Consequences Section, EIS Supplement.

Comment: The mitigation measures included in the original EIS for the Colstrip Project, which applied to the transmission line, should also apply to all alternative corridors considered in the supplement. This would include the mitigation measures presented in Vol. 1, Section 3.3 and Vol. 2, Appendix A3.3.3 of the Colstrip EIS. These measures as well as those proposed on page 2-2 of the supplement should apply no matter which corridor is finally selected. (U.S. Fish and Wildlife, Billings Area, DSC-81-L38-1)

Response: The section on mitigation in the supplement states that all measures listed in the Colstrip Project EIS, Volume 1, Section 3.3 will be applicable. The measures listed in Volume 2 are included by reference in Volume 1, Section 3.3.

Comment: In the EIS it is stated that mitigation for wildlife--in particular, elk--will be accomplished by Dr. Pictin's suggested study of 1979. Who the hell is he, what would his study entail, and who is going to implement it?? No doubt, someone paid to keep a low profile. (Robert Lewis, DSC-81-L35-4)

Response: Dr. Picton is a Professor of Wildlife Biology at Montana State University. He has submitted to BPA, at the request of the Forest Service, a proposal to study the effects of the Colstrip line on the elkherd in the Berkin Flat-Pole Mountain area. A study of this scope is under consideration by BPA as part of an overall impact monitoring program. Selection of a particular proposal would occur following advertisement and competitive procedures required by Federal procurement regulations. For additional discussion, see the Mitigation section of the Final Supplement.

PUBLIC COMMENT CONTENT ANALYSIS

METHODOLOGY

The means (methodology) for classifying and analyzing comments was approved on April 7, 1981 by the steering committee. Representatives from BPA, BLM, and FS were present.

For the identification of comments and analysis of context, an entire letter or public presentation was defined as a statement. Each letter or public hearing statement was to be broken down into comment units requiring analysis and/or response. Comments were then to be categorized within the following outline.

I. General Project Level Comment

- A. Project Approval
- B. Project Disapproval
- C. Information Giving/Specific Issue
 - 1. Supportive
 - (a) General Project
 - (b) Environmental Process
 - (c) Environmental Consequences
 - (d) Alternatives
 - (e) Public Involvement
 - (f) Socio-Economic
 - (g) Mitigation
 - 2. Non-Supportive
 - (a) through (g)
- D. Information Seeking/Specific Issue
 - 1. Supportive
 - (a) through (g)
 - 2. Non-Supportive
 - (a) through (g)

II. Alternative Level Comment

- A. Alternative Approval
- B. Alternative Disapproval
- C. Information Giving/Specific Issue
 - 1. Supportive
 - (a) through (g)
 - 2. Non-Supportive
 - (a) through (g)
- D. Information Seeking/Specific Issue
 - 1. Supportive
 - (a) through (g)
 - 2. Non-Supportive
 - (a) through (g)

Definitions of terms used in the analysis are as follows:

General Project Level Comment: A comment which does not identify a particular alternative.

Alternative Level Comment: A comment which clearly identifies a particular alternative.

Approval: A comment which expresses specific approval at the project level.

Disapproval: A comment which expresses specific disapproval at the project level.

Supportive: A comment on a particular issue indicating readily identifiable support at the project or alternative level.

Non-Supportive: A comment on a particular issue which does not clearly support the project or alternative. Neutral comments were placed in this category.

Information Giving: A comment providing some information.

Information Seeking: A comment asking for information.

Results

Public and agency comments were generally not supportive of the project or the alternatives.

Following are the comments most frequently made at the Project level:

General Project - Federal jurisdiction in route selection was not accepted.

Environmental Process - Opposition was expressed to segmentation of the EIS. It was felt that impacts to wildlife received too much emphasis over impacts to people; other commentors suggested that various resource impacts should be weighted more heavily.

Environmental Consequences - Concerns were expressed about consequences to human health, wildlife and eagles and various other resources (cultural, esthetic, wilderness, recreation, agriculture, and rangeland) as a result of this project.

Project Alternatives - Many commentors felt that public lands should be used wherever possible in locating the transmission line. Commentors also felt that the line should be located where local residents want it. Many commentors supported efforts to find a route that avoids residences and irrigated land. Shipping coal west was suggested.

Socio-Economic - Concerns were expressed regarding the loss of tax revenues and whether BPA would provide some form of compensation such as impact payments. Population figures in the EIS for the Deer Lodge Valley (primarily in Gold Creek) were felt to be erroneous. Concerns were also expressed regarding devaluation, loss of, and nuisance to private property. Impact upon local economies was also a concern.

Comments seeking information at the project level were non-supportive and emphasized the following:

General Project: Commentors asked why BPA did not comply with the Montana Major Facility Siting Act.

Environmental Process: Commentors asked why use of public land was not maximized.

Alternatives: Questions were asked about conflict of interest on corridors eliminated from further consideration.

Socio-Economic: Requests were made for tax impact information, for compensation for loss of taxes, and for payments for expanded services required as a result of this project.

Most comments at the Alternative Level expressed disapproval of the Gold Creek Substation Site 3 and all associated corridors. Non-supportive comments were given for the Designated Corridor across the Deer Lodge Valley, Alternative AA and Alternative AAA. Very little support was received for any of the alternatives in either the Deer Lodge or Boulder Valley area.

CONTENT ANALYSIS DATA

	<u>Frequency</u>	<u>1/</u>	<u>Response</u>	<u>2/</u>
I. General Project Level				
A. General Approval of Project	0		0	
B. General Disapproval of Project	9		1	
C. Information Giving/Specific Issue				
	TOTAL	9		
1. Supportive				
(a) Environmental Process				
(1) Effort made to find route acceptable to all - away from residences and irrigated land	22*		0	
(2) Engineers better qualified to locate segments	11*		0	
(b) Public Involvement				
Opportunity to voice concerns	2		0	
(c) Mitigation				
(1) Support all measures	2		2	
(2) Support measures 1 & 2 in supplement	1		0	
	TOTAL	38		
2. Non-Supportive				
(a) General Project				
(1) Federal jurisdiction not acceptable	23		11	
(2) BPA should comply with State Facility Siting Act and Federal Land Policy and Managment Act	9		6	
(3) Suitability of corridors for additional lines	12		8	
(4) Need for electric energy	3		2	
	TOTAL	45		
(b) Environmental Process				
(1) Object to segmentation	86+		12	
(2) Weighting impacts to fish and wildlife greater than people	81		2	

1/ Frequency is the number of times a comment occurred.

2/ Response is the number of commentors receiving a response.

*Includes 11 signatures on a letter

**Includes 60 signatures on a petition

***Includes 16 signatures on a letter

+Includes both ** and ***

(3)	Federal actions (including centerline surveys) inappropriately indicated decision reached before EIS process complete	17	15
(4)	Supplement biased and misleading	11	2
(5)	Public issues and agency concerns not dealt with	4	3
(6)	Resource impacts not adequately addressed, should be weighted more heavily (Elkhorn Wilderness) Study Area, surface water, wildlife, historic sites, rangeland, socio-economic, endangered species, esthetic, vegetation, agricultural, land	84**	18
(7)	Specific suggestions for correcting supplement	8	8
(8)	Impact payments, taxes, and compensation to landowners not adequately addressed	6	6
(9)	Mitigation not properly addressed	2	2
(10)	Direct current transmission not addressed	6	6
(11)	Herbicide impacts not addressed	2	2
(12)	Health effects not adequately addressed	2	2
(13)	Recreation impacts not properly balanced, impacts in Boulder Valley should be examined	3	2
(14)	Environmental impacts of alter- natives not adequately reviewed and weighted	4	3
(15)	Other areas not adequately addressed: 230-kV inter- connections, paralleling BPA's 2020 study, true cost (cost/ benefit, short-term/long-term)	4	4
(16)	Forest impacts overemphasized	1	1
(17)	Original EIS seriously flawed	2	1
(18)	Entire process is denial of due process	1	1
	TOTAL	324	

(c) Environmental Consequences

(1) Impacts on fisheries and wildlife (includes eagles)	37	17
(2) Impacts on human health	42***	20
(3) Impacts on people, lifestyle and homes	23***	4
(4) Safety considerations	20***	5
(5) Impacts on resources (cultural, esthetic, recreation, wilderness study area, agriculture, rangeland)	31	18
(6) Land use impacts and conflicts	5	4
(7) Effects of herbicide application	2	2
(8) Adverse socio-economic effects on Boulder	2	2
(9) Impacts of 500-kV line greater than 230-kV line	2	2
(10) Avoid geologic hazard areas	<u>1</u>	1
TOTAL	165	

(d) Alternatives

(1) Issue of agency planned use and wilderness needs to be aired as relates to maximizing use of public lands for transmission lines	60**	1
(2) Maximize use of State and Federal lands	81**	6
(3) Locate plants on coast and use coal or oil	12	10
(4) Put line where public wants it	23	4
(5) No real alternatives presented, or alternatives limited by segmentation	3	2
(6) Prepare regional EIS before establishing new major corridors	1	1
(7) Energy conservation could delay need	1	1
(8) No action (use Designated Corridor) alternative missing	<u>1</u>	1
TOTAL	182	

(e) Public Involvement		
(1) Public wants to be involved	14	6
(2) Public feels they are not being involved	30***	10
(3) Public will not select route across their neighbor's community, i.e., let Federal agencies do it	18*	1
TOTAL	62	
(f) Socio-Economic Impacts		
(1) Loss of tax revenue, payments in lieu of taxes, impact monies unsatisfactory	20	8
(2) Loss of, impact on, devaluation of nearby private property	9	8
(3) Population figures and residence distribution incorrect	61**	2
(4) Impact on local economies	10	7
(5) Mountains not amenable to transmission lines	2	2
(6) Winston Valley Route (State approved) less costly than mountains	1	1
TOTAL	103	
(g) Mitigation		
(1) Aircraft safety	2	2
(2) Measures to protect traveling public	3	0
(3) Responsibility for damages to county roads, bridges	2	2
(4) Ensure emergency medical facilities during construction	1	1
(5) Make provisions for compensation for future impacts	6	5
(6) Measures to protect wildlife, birds	4	4
TOTAL	18	

D. Information Seeking/Specific Issue

1. Supportive	0	0
2. Non-Supportive		
(a) General Project		
(1) Compliance with State Law (MFSA) and FLPMA	61**	1
(2) All others	16	13
(b) Environmental Process	5	5
(c) Environmental Consequences		
(1) Effects on existing lines	60**	1
(2) All others	16	16

(d) Mitigation	4	4
(e) Alternatives		
(1) Conflict of interest on abandoned corridors	60**	1
(2) Why exclude maximum use of public lands	62**	2
(3) All others	8	7
(f) Public Involvement	7	4
(g) Socio-Economic		
(1) Impact to tax base	76+	2
(2) Compensation for tax loss (schools & services)	77+	3
(3) Payment for expanded services	76+	2
(4) All others	2	2
	<u>530</u>	
TOTAL		

	Alternative	Frequency	Response
II. Alternative Level Comments			
A. Approval			
	Black Mtn +AAA	1	0
	Boulder	1	0
	Substation 3	2	0
	TOTAL	<u>4</u>	
B. Disapproval			
	Designated Boulder	1	0
	Any alt. Deer Lodge Valley	4	0
	AA	5	0
	AAA	3	0
	Substation 3 and all corridors to it	67**	0
	Substation 3	9	0
	TOTAL	<u>89</u>	
C. Information Giving/Specific Issue			
1. Supportive			
	AAA	1	0
	Black Mountain	1	0
	State Corridor	1	1
	Substation 3	1	0
	TOTAL	<u>4</u>	

2. Non-Supportive

(a) Environmental Process		
AA	4	1
AAA	2	0
AAA + SS.3	4	0
All corridors + SS.3	82+	5
C	1	0
SS.3	13	6
Des. Corr (DLV)	2	2
Des. Corr (Garr W.)	1	1
TOTAL	109	

(b) Environmental Consequences		
Basin	3	0
Designated (DLV)	17*	4
Designated Wst of Garrison	6	2
Thunderbolt	1	0
A	2	1
AA	29	5
AAA	8	2
A + Thunderbolt	1	0
AAA + Black Mountain	1	0
All routes through		
Gold Creek	2	1
SS 1	1	0
SS 2	1	0
SS 3	6	1
TOTAL	78	

(c) Public Involvement		
Boulder/Garrison	1	1
Designated Corridor (DLV)	6	3
AA	2	0
AAA	4	2
Use public lands	2	0
Substation 3	64**	1
TOTAL	79	

(d) Socio-Economic		
AAA + Substation 3	2	0
AA	10	4
Designated (DLV)	4	0
Substation 3	4	1
TOTAL	20	

D. Information Seeking/Specific Issue

1. Supportive	0	0
2. Non-Supportive		
(a) Environmental Process		
(1) Designated (Boulder)	1	1
(2) Substation 3 (Gold Creek)	1	1
TOTAL	2	

(b) Environmental Consequences			
	TOTAL	$\frac{2}{2}$	1
(c) Socio-Economic Substation 3			
	TOTAL	$\frac{2}{2}$	2

CONSULTATION, REVIEW, AND PERMIT REQUIREMENTS

This section discusses BPA responsibilities toward resources protected by special legislation other than NEPA. The resources are identified in Federal and State statutes, Executive Orders, and other administrative mandates. Specific impacts on any of these protected resources found in the project area are discussed elsewhere. However, each special law requires that certain questions be answered, specific issues be addressed, and/or special consultation procedures be followed. This section outlines what BPA has done and must do in the future to comply with these requirements. Where special legislation does not apply to this project, reasons are given.

ENDANGERED SPECIES ACT

The U.S. Fish and Wildlife Service (USFWS) has been consulted to determine whether construction of the Townsend-Garrison segment of the Colstrip transmission line and the proposed substation will affect any listed or proposed threatened or endangered plant or animal species. According to a December 16, 1980 letter, the only listed or proposed threatened or endangered species in the project area are the bald eagle (Haliaeetus leucocephalus) and peregrine Falcon (Falco peregrinus). The USFS has also reported finding the grizzly bear (Ursus horribilis) in the area. BPA conducted a biological assessment, and concluded in its report (February 13, 1981) that the proposed project was not likely to affect the grizzly bear or peregrine falcon. The bald eagle, however, might be affected at the Missouri River crossing. On April 10, 1981, the USFWS issued a biological opinion stating that the proposed transmission project from Townsend to Garrison is not likely to jeopardize the continued existence of the bald eagle.

Howell's gumweed (Grindelia howellii), a candidate species for listing as a threatened plant, is found in the Clearwater Valley of Missoula and northern Powell Counties, in the Swan Range. Its habitat is larch/Douglas fir forest on rocky granitic crags at elevations of 3,800 to 4,400 feet. None of the corridors in the Deer Lodge area crosses the Clearwater Valley, and no larch/Douglas fir forests are encountered. This species should not, therefore, be affected by the transmission line.

If this or any other species known to occur in the study area becomes officially listed or proposed before completion of the project, BPA will reevaluate its responsibilities under the Endangered Species Act. Under Section 7(c), as amended in 1978, of the Endangered Species Act (16 USC, Sections 1531-1543), BPA will not undertake any actions that would jeopardize the continued existence of any threatened or endangered species.

CULTURAL RESOURCES LEGISLATION

Twenty sites within the study area are presently listed or are eligible for listing on the National Register of Historic Places. Within 1/2 mile of the corridors, there are also 28 known historic sites which may be eligible for the National Register. The Boulder, Wickes, Basin, and Gold Creek Historic Districts, as well as a "Multiple Resource Area" up Basin and Cataract Creeks would be crossed by or have corridors visible from them. With careful centerline and tower location, BPA should be able to avoid disturbing any of these sites. Use of nonspecular conductor and painted or darkened towers will minimize any visual impacts to sites located at a distance from the right-of-way.

No properties listed on the National Registry of Natural Landmarks or the World Heritage List would be affected by the project. The project will have no effect upon access to known religious sites or on ceremonial rites of the Native Americans.

Before construction of the transmission line and substation, a qualified archeologist/historian will survey the selected corridor and substation site to determine whether any previously unknown historic or archeologic sites are present and to determine the extent of known sites. An eligibility determination request will be made of the Secretary of the Interior for any historic or archeologic site which will be affected by the project and which also meets the National Register criteria. BPA will consult with the Montana State Historic Preservation Officer and the Advisory Council on Historic Preservation on matters involving effect, adverse effect, and appropriate mitigation measures with respect to any National Register properties.

If any cultural resource is encountered during construction, BPA will comply with the guidelines and procedures of the Advisory Council (36 CFR, Part 800), the provisions of Section 106 of the National Historic Preservation Act (16 USC, Section 470f), Executive Order 11593 (May 13, 1977), the National Environmental Policy Act (42 USC 4321-4327), and the American Indian Religious Freedom Act (42 USC 1996).

INTERGOVERNMENTAL COOPERATION ACT (LAND USE PLAN CONSISTENCY)

Except where there is clear justification, such as overriding national interest, Federal plans and projects are to be consistent and compatible with State, areawide, and local development plans and programs. The Jefferson County land use plan has been written, but not adopted, approved, or implemented. The goal of the Jefferson County Plan is "to enhance and preserve the rural nature of the area with no drastic changes in existing development patterns." There are no specific references to existing or planned transmission lines in the land use plan.

The transmission line would cause no change in development to occur in Jefferson County. Although road and transmission line construction and visual impacts of the completed line would not enhance the rural nature of the area, they would not be a drastic change from normal development. In this way, the alternatives are consistent with the Jefferson County land use plan.

The Powell County land use plan has been written and adopted, but not approved or implemented. It does not address new transmission line locations. The goal of the Powell County Plan is "to assure that patterns of development will have a minimal adverse effect on agricultural and timber lands and critical wildlife areas." Of the alternatives in Powell County, the Black Mountain +A Alternative would have more than minimal impacts to these resources. Other alternatives in Powell County would minimize impacts to the combined agricultural, timber, and wildlife resources and so would be compatible with the goal of the land use plan.

Among the purposes of the Butte-Silver Bow Land Use Plan are the definition and preservation of the character of the Butte-Silver Bow planning area and the preservation of parks and open space. The plan does not address new transmission line locations for a project of this nature. Because of the great potential for paralleling existing power lines/utility corridors along Alternatives E and F, these alternatives in Silver Bow County would preserve the existing character of the county and would be compatible with land use plans.

Goals of the Anaconda-Deer Lodge County Plan are to preserve existing land uses where compatible with future needs, and to change the existing land use when incompatible with the best use of land in terms of the best ecological, engineering, and economic planning principles. The plan does not address new transmission line locations for a project of this nature.

Alternative D and a portion of Alternative E, located in Deer Lodge County, would change some existing land uses and would not be the best use of the land in terms of ecological, engineering, and economic planning principles. They would not be consistent with the Anaconda-Deer Lodge County Plan.

COASTAL ZONE MANAGEMENT ACT

Because the study area is in Montana, it does not fall within the coastal zone as defined by the Coastal Zone Management Act (USC 1451 et seq.). Therefore, the project does not affect the coastal zone, and a determination of consistency or of no effect is not required.

EXECUTIVE ORDER 11988, FLOODPLAIN MANAGEMENT

Federal agencies are required to assess the effects of a proposal on 100-year floodplains under E.O. 11988. Floodplain boundaries were determined from the Flood Hazard Boundary Maps prepared by the U.S. Department of Housing and Urban Development.

All of the corridors in the Deer Lodge area except Alternatives E and F would cross the Clark Fork floodplain. Floodplain width makes it unlikely that this floodplain could be spanned. However, disturbance of soil and vegetation would be minimal. Towers would be built on concrete footings designed to withstand flooding. Construction activities and the physical presence of the transmission line will not alter floodplain characteristics or create the potential for greater loss of property or life during flooding. Although BPA could avoid crossing the Clark Fork floodplain with Alternatives E and F, the associated environmental impacts to other resources would be far more detrimental than crossing the floodplain.

Alternative A would also cross the Baggs Creek floodplain; Alternative AA would cross the Little Blackfoot River floodplain; and Alternative C and the Designated Corridor would cross the Peterson Creek floodplain. All of these floodplains would probably be spanned.

EXECUTIVE ORDER 11990, PROTECTION OF WETLANDS

As required by E.O. 11990 and Department of Energy Regulations (10 CRF, Part 1022 (44 F.R. 12595, March 7, 1979)), BPA has studied the proposal to determine whether it would have any adverse effects on any wetlands. U.S. Fish and Wildlife Service has not made a National Wetlands Survey of this area, so identification of wetlands was made using the U.S. Fish and Wildlife Service definition of wetlands, U.S. Geological Survey maps, and BPA preliminary field and aerial photography investigations.

A number of small wetland areas was identified along the corridors. Because of their small size, however, these wetlands could all be spanned. Therefore, no action would take place in a wetland or would foster the development of a wetland.

PRIME AND UNIQUE FARMLANDS

According to the USDA Soil Conservation Service in Montana, a soil survey must be completed on the land before a designation of Prime or Unique can be made. At the present time, mapping is not completed for any of the areas crossed by the project, so no Prime or Unique farmland has been identified.

RECREATION RESOURCES LEGISLATION

A review of the Wild and Scenic River system inventory of listed and proposed rivers (16 U.S.C. Section 1273(b)) indicates that no rivers or portions of rivers qualifying as Wild River, Scenic River, or Recreation River areas are within the project study area. No National Recreation Trails, or connecting or side trails, as inventoried in the National Trails System (16 U.S.C. Sections 1242-1245) are in the study area. However, all Deer Lodge area alternatives will cross the Continental Divide National Scenic Trail corridor within which a specific trail location has yet to be decided. BPA plans to use non-specular conductor, painted or darkened towers, and selective clearing to minimize impacts of the transmission line crossing of any trail location. These measures would make the project compatible to the extent practicable with the nature and purposes of the National Trails System.

A portion of the Boulder Alternative lies within the USFS Elkhorn Wilderness Study Area. The centerline could be located within the Boulder corridor to avoid the study area. No other designated Forest Service or BLM Wilderness or RARE II lands or study areas are crossed.

All three Boulder/Basin Area corridors would cross I-15, a scenic highway. Black Mountain +A, +AA, and +AAA Alternatives would cross the Spring Emery road west of the Divide; the road has been marked as a scenic loop and is in the process of being submitted to the National Recreational Trail System. The use of non-specular conductor, painted or darkened towers, and careful centerline location to avoid crossing the roads at or near vistas would minimize impacts on the roads.

URBAN POLICY

This document discusses an individual project, not a major policy or program initiative. Therefore, effects on cities, counties, and other communities are not covered by this legislation.

PERMIT FOR STRUCTURES IN NAVIGABLE RIVERS

A Rivers and Harbors Appropriation (Refuse) Act Section 10 permit will be required from the U.S. Army Corps of Engineers for the Missouri River crossing.

DISCHARGE OF DREDGED OR FILL MATERIAL INTO WATERS OF THE U.S.

The Boulder or Deer Lodge Area Alternatives do not include discharge of dredged or fill material into the waters of the United States. Therefore, a Federal Water Pollution Control (Clean Water) Act Section 404 permit is not required from the U.S. Army Corps of Engineers.

PERMIT FOR RIGHT-OF-WAY ON PUBLIC LAND

This project will cross lands administered by BLM and USFS. BPA will obtain the necessary Federal land management agency right-of-way permits for the project.

CONTRACT COMPLIANCE WITH CLEAN AIR AND WATER ACTS

BPA will not contract for goods, services, or materials with any facilities listed on the EPA List of Violating Facilities.

CLEAN AIR ACT

Impacts of the project on air quality would be short-term and would result primarily from dust, exhaust emissions from construction equipment and vehicles, and smoke from burning of clearing debris.

Any particulates from construction dust; particulates, nitrogen oxides, and hydrocarbons from burning; and carbon monoxide, nitrogen dioxide, sulfur dioxide, ozone, or particulates from vehicles and equipment would be well below primary and secondary limits prescribed by the National Ambient Air Quality Standards. Consequently, the project would not pose a health hazard to people in the area and would not cause environmental damage.

This project would also conform to all Montana State Implementation Plan requirements. The project area is not within and would not affect any designated Class I airshed. The project area is within the Helena Air Quality Control Region (AQCR), but is not affected by any emission limitations of that AQCR.

Because the substation and line would not have any emissions, air standards addressed in the New Source Performance Standards or National Emission Standards for Hazardous Air Pollutants would not be applicable to this project.

Measures such as watering construction sites and watering or gravelling roads would be used as necessary to control dust. Exhaust emissions would be minimized by using vehicles and equipment that were properly maintained and operated. Slash burning emissions would be reduced by burning when debris was dry and weather was favorable.

FEDERAL WATER POLLUTION CONTROL ACT
AND
CLEAN WATER ACT

To ensure that no oil would reach state waters, as required by Montana State Water Quality Standards, BPA will prepare an oil spill contingency plan for the substation site and make every reasonable effort to prevent any spilled materials from reaching surface or groundwaters of the State of Montana. As part of this effort, BPA will use a containment system in the substation, such as excavation and removal of contaminated soil from the site, and mechanical methods using oil separation tanks at a lagoon collection system. The method selected for use at the Garrison Substation will depend upon land availability and results of geologic and soil analyses. Preliminary studies indicate that the high water table at Substation Site 3 may eliminate the option of containment by excavation.

BPA will minimize sedimentation which could affect growth and propagation of salmonid fishes and associated aquatic life, waterfowl, and furbearers (as required by the Montana State Water Quality Standards), by implementing mitigation measures identified in the Colstrip Project EIS, Volume 2, Appendix A3.3.3.

Since there are no navigable waters of the United States near any of the substation sites, the proposal would not spill oil into any such waters or onto adjoining shorelines. No effluent would be discharged from the site.

SOLID WASTE DISPOSAL ACT
AND
RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)

The types of solid waste generated during construction and operation of the transmission line and substation can be classified as clearing, construction, domestic (municipal), and hazardous and problem waste. These wastes would be collected, transported, stored, and disposed of according to applicable Federal and State laws, regulations, and guidelines.

Domestic and construction solid waste generated during construction would be disposed of in a state-approved landfill. The small quantity of these

wastes would not adversely affect the landfill. Certain portions (metal, rubber, and paper) would be recovered for sale and reprocessed where practical.

Hazardous and problem waste generated during the construction and subsequent operation of the transmission line and substation would require special handling to avoid harm to individuals and the environment. These may include such materials as oil, pesticides or residue from pesticide spills, and other chemicals (40 CFR, Part 261). All wastes in this category require special treatment, transportation, and/or special disposal facilities. All hazardous wastes would be disposed of according to applicable Federal and State laws, regulations, and guidelines. If BPA removes any penta-treated wood poles, any residue on the poles would be treated as a hazardous waste.

SAFE DRINKING WATER ACT

A limited number of persons would use the water, which is supplied to the substation. The system would not qualify, therefore, as a public or community water supply system. The project would not be affected by the EPA National Interim Primary or Secondary Drinking Water Regulations (40 CFR, Part 141 and Part 143). There are no sole-source aquifers in the area.

NOISE CONTROL ACT

Because the State of Montana has no noise standards, BPA must comply with EPA Noise Standards. These standards set 55 dB as the maximum yearly average equivalent sound level allowed in residential areas with outside space or at farm residences. BPA policy is to meet such noise limits at the substation boundaries. Preliminary computer model studies indicate low-noise transformers and reactors would be needed at Substation Site 3. In addition, such noise mitigation measures as earthberms or soundwalls might be necessary to further reduce the noise levels to acceptable EPA limits.

FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT (as amended)

The EPA establishes regulations to enforce this act (40 CFR, Part 162), as well as registration of certain pesticides and their use, storage, and disposal (40 CFR, Part 165). In addition, EPA sets protection standards for workers handling such pesticides (40 CFR, Part 170). BPA plans to treat the substation with a soil sterilant. Along the transmission line right-of-way, BPA plans to use a herbicide for stump treatment and control of broad-leaved tree species. BPA will also cooperate with

landowners and local weed control districts to control noxious weeds around transmission line structures in cultivated areas. Application of herbicides will be by hand; we anticipate no aerial application on this project.

BPA will comply with all regulations pertaining to the purchase, use, storage, and disposal of any pesticides (and pesticide containers) used in the construction and maintenance of the transmission line and substation. Chapter V of the BPA Right-of-Way Management Standards (Standard No. 63040-50) details the various procedures and practices used by BPA in order to comply with various Federal regulations relating to the use of herbicides. A detailed discussion of pesticide use by BPA is in the BPA Final Role Statement and the Fiscal Year 1981 Program EIS (DOE/EIS-0060).

TOXIC SUBSTANCES CONTROL ACT

This legislation includes coverage of the processing, distribution, and use of polychlorinated biphenyls (PCB's) (40 CFR, Part 761). EPA regulations on PCB's directly affect BPA because these chemicals have been used as cooling and insulating agents for substation capacitors and have been found as contaminants in transformers. Studies identifying PCB's as health hazards have led to their elimination from use in new transformers and capacitors.

Continued use of PCB transformers, PCB-contaminated transformers, and PCB capacitors is presently permitted under TSCA and the EPA's Regulations at 40 CFR Part 761. However, it is BPA policy to prevent PCB's from being introduced into a PCB-free environment. To accomplish this in the new substation, the following measures will be undertaken: 1) transformers out of existing stock, if used, will be tested before they are moved; 2) technical specifications for new transformers and new transformer oil require that they be certified to be free of PCB; 3) failed capacitors will be replaced only with non-PCB capacitors.

ENERGY CONSERVATION AT FEDERAL FACILITIES

BPA will be constructing a control house and maintenance building at the proposed Garrison Substation. This new Federal building will be designed to minimize energy consumption. The project does not involve the operation, maintenance, or retrofit of an existing Federal building.

L I S T O F P R E P A R E R S

An interagency steering committee, listed below, was formed to provide overall guidance during preparation of the Supplement. These members of the original interagency steering committee for the Colstrip Project EIS were recalled to provide continuity between the EIS and the Supplement.

INTERAGENCY STEERING COMMITTEE MEMBERS

William David Darby, Chief Environmental Coordinator, BLM, Montana State Office, Billings
Gary A. Roam, Environmental Specialist, BLM Montana State Office
Alan D. Evans, Lands Program Leader, BLM Montana State Office
Claude D. Roswurm, Realty Specialist, BLM, Montana State Office
Earl N. Reinsel, Land Management Planner, FS, Northern Regional Office, Missoula
John O. Hooson, Environmental Coordinator, BPA, Portland
Pat Nichols, Biologist/Ray Breuninger, Ph.D., Physical Sciences Coordinator, Observer from Montana Department of Natural Resources and Conservation, Facility Siting Division, Helena

Information and material included in the supplement was provided by a number of persons:

DEER LODGE NATIONAL FOREST INTERDISCIPLINARY TEAM

Edgar V. Brown, District Ranger, Deer Lodge District, Deer Lodge
Roger M. Siemens, District Ranger, Jefferson District, Whitehall
Dean M. Reed, District Ranger, Butte District, Butte
Dean C. Graham, Wildlife Biologist, Butte
Boje T. Nielsen, Landscape Architect, Butte
Dave A. Rupert, Soil Scientist, Butte
Earl R. Williams, Transportation Planner, Butte

BONNEVILLE POWER ADMINISTRATION

Frank S. Worth, Location Engineer, Portland
James R. Meyer, Wildlife Biologist, Portland
Robert E. Reed, Writer/Editor, Portland
Lawrence K. Purchase, Environmental Specialist, Portland
Roy B. Fox, Economist, Portland

The following persons were primarily responsible for preparing the supplement to the Colstrip Project EIS, or a particular background paper or analysis where noted:

Gary C. Insley, Forester, BPA Headquarters, Team Leader

Eight months working for REA electric cooperative, right-of-way maintenance and line construction. One year timber inventory and compartment examination, U.S. Forest Service. Two years timber and land appraisal, BPA. Two years timber sale administration and resource administration, U.S. Forest Service. Since 1979 has been working as a forester and environmental specialist for BPA.

Educational Background:

BS - University of Minnesota - Forest Resources Development

Gary wrote the draft and final EIS.

Cheryl L. Daniels, Word Processing Specialist, BPA Headquarters

Legal Secretary Certificate, Northwestern College of Business -
Fall 1969.

Word Processing 1975 to present.

Cheryl put this document through word processing.

Jack M. Lee, Jr., Wildlife Biologist

Participant on transmission EIS teams at BPA since 1973. From 1975-1980, Chairman of the BPA Biological Studies Task Team. Performs studies on the environmental effects of BPA transmission lines.

Educational Background:

BS - Oregon State University - Wildlife Science

MS - Virginia Poly Tech. - Wildlife Management

Jack prepared Appendix C.

Charles W. Miller, Forester, Deer Lodge National Forest Supervisor's Office

Head of Landscape and Forestry Department with Peoria Park District. Divisional Superintendent on rubber plantation with Firestone Tire and Rubber Company. Seventeen years with U.S. Forest Service at District and Forest Supervisor's Office in timber, watershed management, wildlife, lands, and minerals, including six years in planning, construction, and restoration in conjunction with 500-kV transmission lines. Currently Project Coordinator, Deer Lodge National Forest, Butte, Montana.

Educational Background:

BS - Iowa State University, Ames - Forest Management
MS - Oregon State University, Corvallis - Forest Management

Charley wrote the draft and final EIS.

Judith H. Montgomery, Editorial Consultant, Portland, Oregon

Four years at Portland State University as lecturer, editorial consultant, and teacher on writing-related topics. EIS writing and editing for BPA since 1980.

Educational Background:

BA - Brown University - English Literature
MA - Syracuse University - English Literature
Ph.D. - Syracuse University - American Literature

Judy edited the supplement.

David K. Nelson, Regional Economist, BLM, Butte District Office

Two years as Regional Economist, two years as Land Use Planner with the Bureau of Land Management. Currently a Regional Economist with BLM in Butte, Montana.

Educational Background:

BS - Montana State University - Economics
MS - Montana State University - Agricultural Economics

Dave worked on the Draft Supplement.

Arnold L. Pike, Natural Resource Specialist, BLM, Montana State Office

Since 1976, worked on BLM Salmon District on grazing management plans and as range conservationist on major grazing EIS team.

Since 1979 with Montana State Office BLM developing stipulations, environmental assessments, and permit processing associated with major energy rights-of-way projects, including the Northern Boulder and Northern Tier pipelines and Montana Power Company's transmission line.

Educational Background:

BS - Montana State College - Agriculture

Arnie helped write the Final Supplement.

Julianne C. Sampson, Ecologist

Two years with the U.S. Soil Conservation Service as a field soil scientist. One and a half years with U.S. Bureau of Land Management as an environmental specialist, preparing environmental impact statements. Since 1979 has been working as an ecologist for BPA.

Educational Background:

BS - Oregon State University - Soil Science
Additional undergraduate work in soil science at Lincoln College, New Zealand.

Juli prepared the Consultation, Review, and Permit Requirements, Chapter VII.

Leroy P. Sanchez, Cartographic Technician

Seven years with U.S. Bureau of Reclamation as an Engineering Draftsman-Cartographic Technician. One year with U.S. Bureau of Land Management as a Cartographic Technician (Editor). Since 1978 has worked for BPA as a Cartographic Technician.

Education Background:

El Paso Community College (Colorado Springs, Colorado)
University of Nevada at Las Vegas
Clark County Community College (Las Vegas, Nevada)
Portland Community College (Portland, Oregon).

Leroy prepared the graphics in this document.

Maryhelen Sherrett, Management Assistant, BPA Headquarters

One year as Regional Planner with local government agency. One year as Management Assistant to BPA's Environmental Coordinator for Engineering and Construction.

Educational Background:

BA - Portland State University - Political Science

Maryhelen coordinated the comment/responses and their analyses.

Russell E. Sorensen, Realty Specialist, BLM, Butte District Office

Seven years as Realty Specialist with the Bureau of Land Management in Alaska, Arizona, and currently in Butte, Montana.

Educational Background:

BS - Montana State University - Agricultural Production

Russ wrote the draft and final EIS.

Kevin A. Ward, Environmental Specialist, BPA Headquarters

Three years working for BPA in preparation of graphics for environmental impact statements and environmental analysis. Recently working in data collection and content analysis.

Educational Background:

BS - Portland State University - Geography

Kevin helped prepare the comment/responses.

LIST OF AGENCIES, ORGANIZATIONS,
AND PERSONS TO WHOM
COPIES OF THE STATEMENT
ARE BEING SENT

City

Helena City Planning Board

County

Anaconda-Deer Lodge County Planning Board

Deerlodge County Commissioners

Broadwater County Commissioners

Butte/Silver Bow Government

Deer Lodge City-County Planning Board

County Planner, Powell County

Powell County Commissioners

Chairman Granite County Commissioners

Granite County Planning Board

Jefferson County Commissioners

Jefferson Co. Planning Board

Lewis & Clark County Planning Board

Missoula County Commissioners

Missoula County Attorney's Office

State

State Fish, Wildlife, and Parks

Butte

Warm Springs

Missoula

Dept. of Education

Honorable Mike Anderson

Representative Verner L. Bertelsen

Honorable Joe Brand

Environmental Quality Council

Governor of Wyoming

Administrative Assistant, Lt. Governor's Office

Honorable John E. Manley

State Representative, Mr. Robert L. Marks

State Historic Preservation Officer, Montana Historical Society

Montana State Prison

Honorable Ted Schwinden, Governor of Montana

State Planning Coordinator

Office of Budget & Program Planning

State Clearinghouse, Boise, Idaho

Dan W. Harrington, Dist. 88

Dept. of Community Affairs

Dept. of Health & Environmental Sciences

Dept. of Highways

Dept. of Justice

Dept. of Labor & Industry

Dept. of State Lands

Dept. of Livestock
Montana Dept. of Natural Resources & Conservation
Mr. Leo Berry, Director
Mr. Randall Moy, Facility Siting Division
Montana Bureau of Mines & Geology
Montana Division of Forestry, Anaconda Unit

Congressional

Senator Max S. Baucus
Congressman Ronald Marlenee
Senator John Melcher
Congressman Pat Williams

Federal

Executive Director, ASCS
Dept. of Agriculture
USDA Forest Service, Max Peterson, Chief
USDA Forest Service, Region 1, Missoula
Tom Coston, Regional Forester
Helena National Forest
Townsend Ranger District
Helena-Canyon Ferry
Deerlodge National Forest
Butte
Deer Lodge
Philipsburg Ranger District
Jefferson
Gallatin National Forest
Beaverhead National Forest
Lewis and Clark National Forest
White Sulphur Springs Ranger District
Musselshell Ranger District
Lolo National Forest
Missoula Ranger District
Seattle District, U.S. Army Corps of Engineers
Omaha District, U.S. Army Corps of Engineers
Bureau of Indian Affairs
The Confederated Salish & Kootenai Tribes of the Flathead Reservation
Flathead Agency, Bureau of Indian Affairs
Cooperative Extension Service, Deer Lodge-Powell Counties
Department of Energy
Washington, D.C.
Bonneville Power Administration
Portland
Kalispell
Missoula
Argonne National Laboratory
Oak Ridge National Laboratory

Environmental Protection Agency, Washington, D.C.
Environmental Protection Agency, Region 8, Denver
Montana Office, U.S. Environmental Protection Agency, Region 8
Department of Transportation, Federal Aviation Administration
Federal Regional Council, A-95 Coordinator
Advisory Council on Historic Preservation, Washington, D.C.
Department of Health, Education & Welfare, Denver
Heritage, Conservation & Recreation Service, Denver
U. S. Department of Transportation, FHA, Region 8
Housing & Urban Development, Helena
Bureau of Land Management
Mike Penfold, State Director
Montana State Office, Billings
Headwaters Resource Area, Butte
Garnet Resource Area, Missoula
Montana Energy and MDH Research & Development Institute, Inc.
National Park Service, Denver
U.S. Federal Energy Regulatory Commission, San Francisco
Bureau of Sports, Fisheries & Wildlife, Portland
U.S. Soil Conservation Service, Bozeman
Headwaters R.C. & D. Project, Butte
USDI, Washington, D.C.
USDI, Office of Surface Mines
USDI, Geological Survey, Helena
USDI, Fish & Wildlife Service, Denver
USDI, Fish & Wildlife Service, Billings
USDI, Missouri Basin Region
USDI, Bureau of Reclamation
USGS, Billings, Albuquerque, Denver
Western Area Power Administration, Billings

Organizations

Anaconda Sportsmen's Club, Jerry Piotrowski
James Wolf, Continental Divide Trail Society
Don Harden, Montana 4 x 4 Association
Mr. Mel Beck, Chairman, Deer Lodge Valley Resource Association
Mr. Mike Cook, Vice Chairman, Deer Lodge Valley Resource Association
Mr. Steve Doherty, Northern Plains Resource Council
Mrs. Toni Kelley, Secretary, Deer Lodge Valley Resource Association
Mr. John Vanisko, President
Montana Assn. of Conservation Districts
National Wildlife Federation, Montana Land Management Committee
Mr. Dave Rieder, North Boulder Protective Association
Montana Associated Utilities
Montana Stockgrowers Association
Montana Water Development Assn.
Skyline Sportsmen's Club, Roscoe Nickerson
United Mine Workers of America

Walt Dion, Montana Association of Conservation Districts
Sam. Sperry, Montana League of Conservation Voters
Robert Lyman, President, Montana Wildlife Association
Montana Association of Counties
Friends of the Rattlesnake
Montana Wildlife Federation
Northern Plains Resource Council
Friends of the Earth
Audubon Society
Environmental Information Center
Sierra Club, Bitterroot Mission Group
Sierra Club, Upper Missouri Group
Friends of the Earth
Mike Comola, Montana Wilderness Association
Montana Geological Society
W.O.O.D.
Western Montana Scientists' Commission for Public Information
Montana Chamber of Commerce
Old West Region Commission
James T. Blomquist, Sierra Club
Council of Energy Resource Tribes
Western Environmental Trade Association
Western Forest Industries Association
Western Interstate Energy Board

Libraries

Hearst Free Library, Anaconda
Boulder City Library, Boulder
Butte Free Public Library
William K. Kohrs Memorial Library, Deer Lodge
Great Falls Public Library
Lewis & Clark Library, Helena
Missoula Public & Missoula County Free Library
Environmental Library, University of Montana
Montana Historical Society Library
Montana State Library, Helena
Billings Public Library

Individuals

Mr. S. Ammen
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June Atkins
Mr. Paul Backlund
Mr. Darrell Baker

William and Milan Bandy
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Mr. Andrew A. Beck
Andrew J. Beck
Charles Beck
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Joe Beck
Norma J. Beck
Pete Beck
Mr. Sam Beck
Mr. Tom Beck
Leroy P. Belling
Susan Benedict
Mr. Clifford and Doris Benson
Fred and Bruce Benson
John Best
Dick Blodnick
Fred Blodnick
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Mac E. Burke
Mr. Bill Carlson
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Mr. Ed Cartwright
Jeff Cole
Mr. Barton L. Cooper
Ms. Janice M. Cooper
Mr. & Mrs. Lee Cooper
Dalice Cook
Max Cook
Ross and Brenda Cornell
Mr. Ronald and Lynn Cunningham
Mr. Bob Curtis
Nancy P. Daniels
Mr. Bob Davis

Mr. Don Davis
Glen R. Davis
Allen Denton
Debby Dils
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News Media

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The Anaconda Leader
Associated Press
Billings Gazette
Borrowed Times
Boulder Monitor
Bozeman Daily Chronicle
Independent Record
Jefferson Valley News
Land Use Planning
Lee Newspapers State Bureau
MTN-News
Missoulian

Montana Magazine of the Northern Rockies
The Montana Standard
Montana Woolgrowers Assoc.
Mont-Wyo News
The Plains Truth
The Philipsburg Mail
Silver State Post
Teleprompter Cable TV
Townsend Star
Tribune Capitol Bureau
United Press International
Western Livestock Reporter
KANA Radio
KARR Radio
KBLL Radio
KBOW Radio
KDRG Radio
KGVO Radio
KGVO TV
KGMV Radio
KHTC Radio
KICM TV
KMTX TV
KPAX TV
KTCM TV
KUFM Radio
KXLF Radio
KXLF TV
KYLT Radio
KYSS Radio

Businesses

Anaconda Company, Aluminum Division
Paul and Bette Peterson, Arrowhead Apiaries
Battelle Pacific Northwest Laboratories, Richland
Basin Elec. Power Corp., Bismarck
Burlington Northern, Billings
CITCO (Cities Service Company), Tulsa
Center for Public Interest, Inc., Bozeman
Columbia Gas System Serv. Corp., Wilmington
Dames & Moore, Los Angeles
Dames & Moore, Golden
Dames & Moore, Santa Barbara
Dames & Moore, Billings
Deer Lodge Wood Products
Electric Power Research Institute
Energy Impact Assoc.
Environmental Impact Services

Environmental Management Services Co.
Fabian & Clendenin
First National Insurance, Boulder
Francisco Pharmacy and Gift Shop, Townsend
HML Consultants
The Institute of Ecology, Butler University
Information on Demand
Mr. Albert Kimpton, Kimpton Ranch Co.
Montana Power Company, Colstrip
Charles T. Main, Inc., Portland
Missoula Electric Cooperative, Inc.
Montana Power Company
Pacific Power & Light Co.
Portland General Electric Company
Puget Sound Power & Light Company
Stauffer Chemical Company
Utility Data Institute, Inc.
Universal Field Services
Washington Water Power Company
Wilkinson, Cragun & Barker

Institutions

Colorado State University Library
Powell County High School, Biology Department
Montana Cooperative Wildlife Research Unit, University of Montana
Montana Cooperative Fishery Unit, Montana State University
Montana State University, Museum of the Rockies
Montana State University, Department of Biology
Montana State University, Dept. of Civil Engineering
Montana State University, Department of Biology
Montana State University, Research Administration
Montana State University, Dept. Agricultural Economics
Montana State University Library
Eastern Montana College Library
Miles City Community College
Northern Montana College Library
Northern Montana College, Department of Biology
Pennsylvania State University
Ball State University, College of Sciences & Humanities
MSU, Department of Biology
Montana College of Mineral Sciences and Technology Library
Carroll College Library
University of Montana Library, Documents Division
University of Wisconsin, Water Resources Center

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A P P E N D I X A

TRANSMISSION FACILITY DESIGN AND CONSTRUCTION CHARACTERISTICS

LOCATION CRITERIA

BPA will build a double-circuit 500-kV transmission line from Townsend to Garrison. Environmental impacts would be minimized as much as possible, using the most viable engineering methods and technology.

DESIGN CRITERIA

Right-of-Way

A double-circuit 500-kV transmission line requires a minimum right-of-way width of 125 feet. A previously acquired, vacant right-of-way adjacent to the BPA Hot Springs-Anaconda 230-kV transmission line is available. It is wide enough to accommodate a double-circuit 500-kV line. Where the new line diverges from the 230-kV line, a new 125-foot-wide right-of-way would be acquired.

Right-of-way width was established after consideration of conductor "blow-out" (lateral movement of conductors due to wind), minimizing electrical field strength, and audible noise and radio frequency interference (RFI). Conductor "blow-out" is the most stringent criterion. The amount of "blow-out" depends on a number of factors such as distance between towers, line sag and ground clearance, wind speed, ice load, and type of connection to the towers.

Land for the right-of-way would be acquired by easement. Landowners may continue certain uses of land under the lines, but precautions would be necessary. A steady stream of water from sprinkler systems operated near high-voltage lines should not touch the conductor. An electric current could follow the water back to the sprinkler under certain unusual conditions.

Structure Types

Self-supporting, stacked double-circuit towers similar to that shown in Figure A-1 would be used. The steel lattice structures would have a base approximately 26 feet square. An average of 4.5 towers would be built per mile, depending upon terrain and structural design. The amount of steel used per mile will range from 150 to 190 tons.

BPA uses several types of footings to support towers, depending upon ground conditions. They include grillage footings with a framework of galvanized steel and wide-flange beams, as well as pressed footings of galvanized steel plate. Each is buried in an excavated pit. On level ground, the pit would be about 10-15 feet square and deep. Tower legs are attached to footing stub extensions. Reinforced concrete footings are used for special conditions. Stub extensions are sometimes cemented into holes blasted into solid rock.

When towers are to be erected, the components are usually moved from a nearby staging area and assembled on-site. The erection method is left to the contractor. Assembly at the tower site reduces the bulk of material transported to tower sites, and minimizes the required widths of access roads.

Conductor Types

Electrical energy flows through conductors in transmission lines. The same arrangement of conductors would be used on each side of the tower. Each circuit consists of three electrical phases. Each phase has three subconductors in a bundle. The subconductors are arranged in an inverted triangle with about 20 inches on a side.

Individual conductor diameter would be 1.603 inches. The combined weight of the conductors would average about 54 tons per mile per circuit.

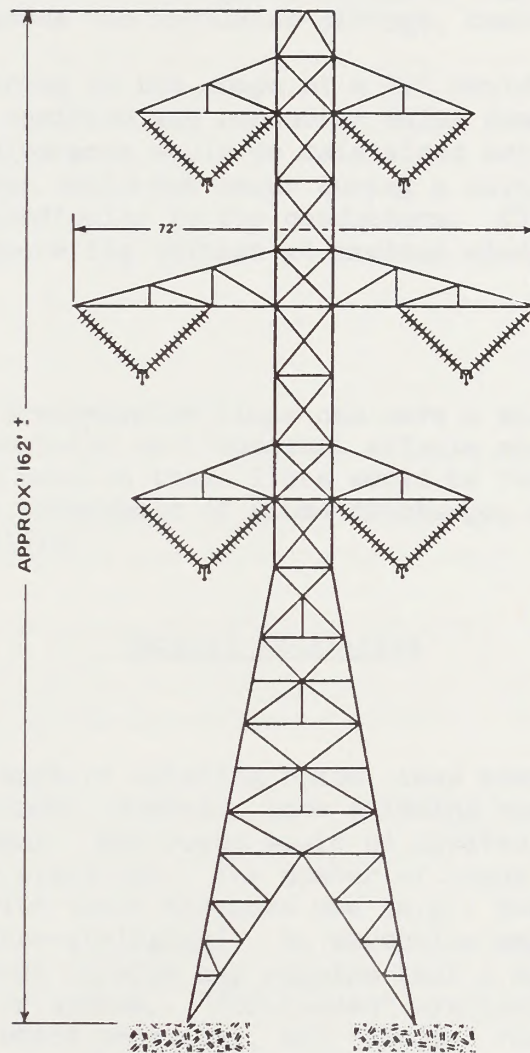
Subconductors would be held to the triangular configuration with spacers or spacer-dampers. They are installed about every 200 feet to reduce aeolian (wind) vibration and to keep the subconductors from hitting each other. BPA will use non-reflecting conductor from Townsend to Garrison to mitigate visual impacts.

The capacity of the line would be about 1,500 MVA or 1,400 MW. This capacity would vary according to load conditions and the series compensation.

Two 1/2-inch steel shield wires would be used above the line to intercept direct lightning strikes. Lightning tends to strike the higher shield wires. It then goes to ground through the shield wires and towers.

Insulators

A "V" string of standard glass or porcelain insulators would be used to suspend the conductor bundles from the towers while maintaining electrical isolation between the conductors and the towers. Each insulator string would consist of brown, sky-gray, or translucent light green standard "bell-shaped" segments having a spacing of 5-3/4 inches and a diameter of 10 inches. The mechanical strength of all insulator strings



**TYPICAL 500 KV DOUBLE CIRCUIT
STACKED CONFIGURATION TOWER**

**Figure A-1
SCHEMATIC OF BPA TOWER DESIGN**

would conform to National Electric Safety Code (IEE 1977) requirements. Standard insulator string length is 18 insulator segments per side of the "V". For high elevations where icing conditions could occur, 20 segments per side of the "V" string would be used. This would give a total length of insulators on each side of the "V". Because of the length of the insulator string, there would be little or no possibility that any birds could span the gap between an energized conductor and tower and be harmed. Figure A-1 shows the insulator strings, conductors, and towers.

A double insulator string in the shape of a "V" would support the conductors, and also restrain any conductor swing due to external forces. Sufficient clearance would be maintained between conductors and tower so that flashover would not occur during a switching surge in a 60 mph wind blowing perpendicular to the conductors. Clearance would be adequate for normal operating voltage at maximum winds of 120 miles per hour.

Hardware

The hardware used on transmission lines can have a significant influence on corona and its associated environmental effects and electrical losses. All hardware used on these lines would be required to be corona-free up to the threshold of plume discharge, a partial electrical discharge that is visible.

Support Facilities

Access Roads

Maximum use would be made of existing roads, thus keeping new construction to a minimum. However, some existing roads may require considerable improvement. New roads would be located within the right-of-way whenever practical. The number of roads would be held to a minimum, consistent with their intended use (e.g., tower construction or tensioning and conductor-stringing). An exception may occur in national forests where the Forest Service may require that a higher quality road be built for logging or access. "Non-bladed" overland travel on marked routes would be done where practical, and "bladed" roads would be constructed only as necessary.

Access road length would be determined by design, once surveys have been completed. The roads could not be designed until the tower sites are located, but it is anticipated that the average access road length would not exceed the following ratios:

Ratios of Access Road Length to Line Length

Paralleling Existing Lines	Plains	0.4:1
	Mountains	1.0:1
New Construction	Plains	1.1:1
	Mountains	1.6:1

Staging Areas

Transmission line parts (towers, conductors, insulators, hardware, etc.) are stored and often subassembled in staging areas selected by the construction contractor. The best location for staging areas is next to railroads and existing roads. Each area occupies about 5 to 10 acres of land. The average distance between staging areas for standard methods of construction is about 30 to 35 miles. If staging areas must be separated by distances of 40 to 50 miles, up to 15 acres of land may be needed for each area. Small areas located about 10 miles apart would be required if helicopters are used to erect the towers. Staging areas would be held to the smallest practical size. They would be maintained during construction and then vacated and restored.

Communication and Control Facilities

Background - Radio sites located along the general route of the transmission facilities would also affect the study area. These sites would be used for active microwave repeater stations, microwave terminal stations, and passive repeater stations:

Active microwave repeater stations use electrical energy to amplify and retransmit the microwave signals from one station to the next.

Microwave terminal stations use electrical energy to operate the microwave radio equipment. A terminal station communicates with an associated microwave station in one direction only and does not pass on (repeat) microwave signals from one station to the next.

Passive repeater stations are reflectors like billboards and are mounted on self-supporting structures. Passive repeaters pass on microwave radio signals from one microwave station to another by reflection without the need for electrical power. The size and location of a passive repeater depend in part on distance and direction to the active stations it serves.

Construction Considerations

The construction of communications and control facilities requires supervision by responsible persons to insure proper installation and the protection of personnel and private property.

Construction Sequence

The phases of construction are: survey and staking, clearing, road construction, tower construction and erection, conductor stringing, and cleanup and restoration.

BPA expects the various transmission line segments to be built by several prime contractors. Each contractor would establish his/her own construction headquarters.

Surveys and Staking

Surveying and staking is required for all rights-of-way, tower sites, roads, and substations, as well as for other facilities such as communication sites, staging areas, heliports, wire stringing sites, etc.

The construction surveyors arrive on the scene first. Their surveys are usually more detailed and intensive than the survey made for line design. Their work requires some clearing and much mobility along the right-of-way. The crews consist of three or four people.

Other engineering data may be needed, such as that from tower foundation investigations. This data may be gathered during the survey phase.

Clearing

Clearing means removing vegetation from sites to permit construction and future operations. Man-made objects such as fences may have to be modified, moved, or demolished. Sometimes natural barriers such as rock outcroppings are cleared.

Equipment ranges from hand tools to large bulldozers. Crew sizes vary with equipment used, vegetative density, and complexity of the operation. The total number of workers may go as high as 30. Cleared vegetation must be disposed of: it may be burned, buried, chipped, or taken to a disposal site. Sometimes the material is piled and scattered later after construction. Marketable timber is usually sold or disposed of as agreed with the landowner.

The proposed transmission line right-of-way is a single 125-foot wide path. If the total width were cleared, the area cleared per line mile would be slightly over 12 acres. However, the entire right-of-way is seldom cleared (see Figure A-2). Selective clearing outside the rights-of-way may be needed to remove tall "danger" trees or large snags that could fall onto conductors or towers. The number of trees cleared would vary according to timber density, height, growth rate, and terrain.

The tower sites require enough space to assemble and erect towers which are more than 175 feet tall and which have arms about 85 feet wide. Flat bed trucks and large cranes with booms over 175 feet long are needed. Clearing must accommodate this equipment. If the 125-foot right-of-way is fully cleared, there should be adequate space within this area for a tower site; if not, a site at least 150-foot square, or about half an acre, must be cleared. Tower sites are usually cleared more completely than line rights-of-way.

If the electrical resistivity of the soil is too great to allow adequate grounding of the tower, then some additional clearing may be required for the installation of from one to six 250-foot lengths of bare aluminum wire (counterpoise). Burial can be by hand-trenching, plowing in by tractor or caterpillar, or by machine-trenching. Clearing is required to allow movement of the installing machinery.

Road Construction

Existing roads may require widening, additional gravel, more drainage, or other reconstruction because of the line project. New roads will also be needed. Some temporary access roads are usually required for line construction.

Rock required for road construction and improvement would come from local quarries or sites acquired by the contractor. Existing and new sites should be as close to the construction activities as possible.

Equipment and workers are those normally used for rural road construction, ranging from hand tools to bulldozers, drag lines, dump trucks, graders, and possibly large gravel-crushing equipment. Some road construction crews may range into the twenties in number. Many of the same workers and equipment used for clearing can also be used for construction.

Tower Construction and Erection

This includes tower component assembly, installation of footings and any guys, tower erection, and counterpoise installation (tower grounding).

Footings are excavated after tower sites are cleared. Some site leveling with a bulldozer may be required for the crane. Sometimes blasting is required. Excavation equipment may include backhoes, dump trucks, power augers, wagon drills, bulldozers, compressors, and blasting equipment. Augers and wagon drills are mounted on large trucks such as 5-ton 6 x 6's. Crews range from a few to a dozen persons.

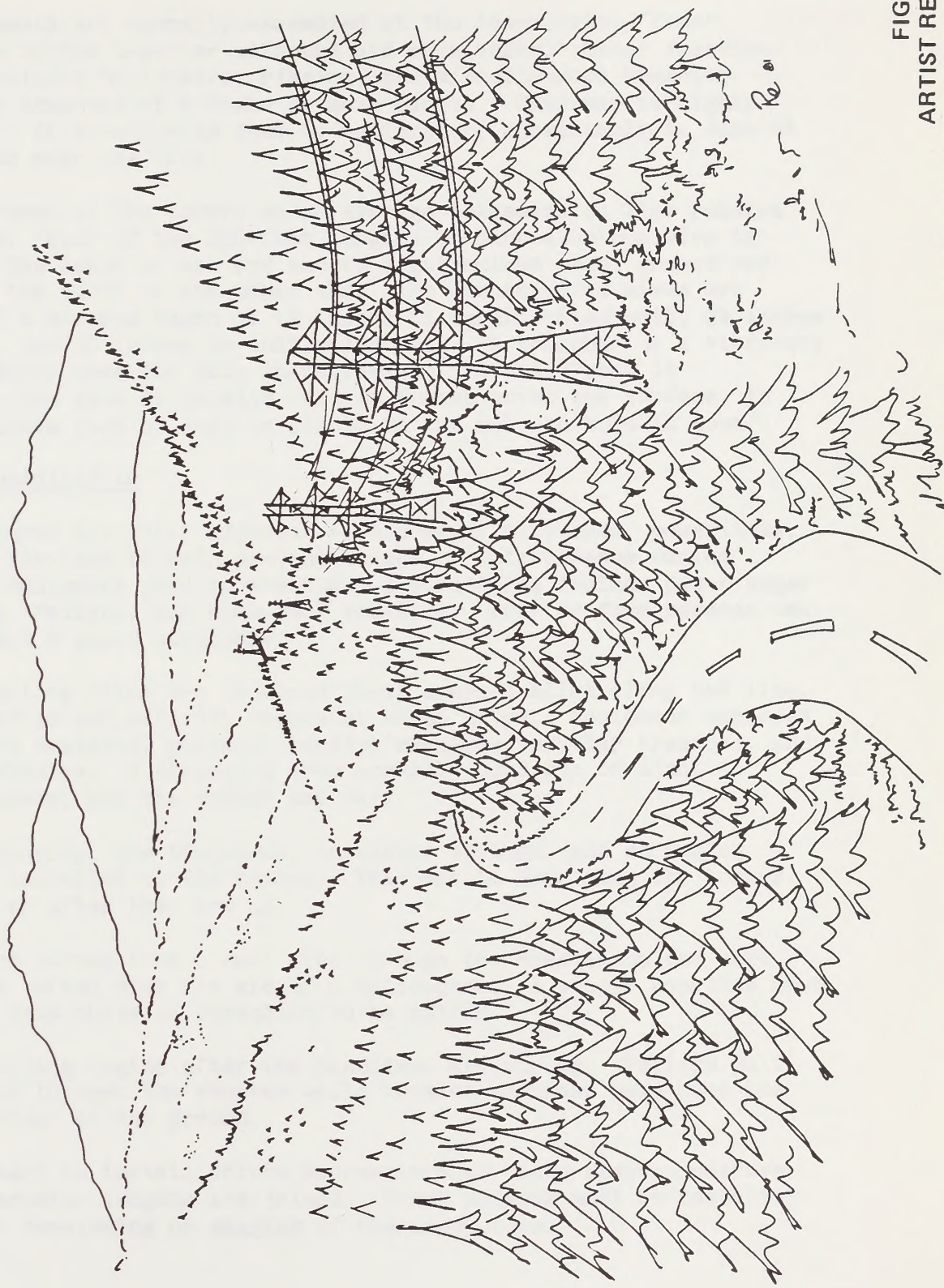


FIGURE A-2
ARTIST RENDITION
RIGHT-OF-WAY AFTER CLEARING

Tower components are normally assembled at the tower site. Tower sections are bolted together with the aid of a crane. Other erection equipment includes bulldozers, rigging, and miscellaneous vehicles. Crews may be composed of a dozen or more people. They may be highly specialized. If erection is done by helicopter, subassembly is done at staging areas near the line.

About 10 percent of the towers on an average transmission line require counterpoise. Each of the 250-foot lengths of bare aluminum wire is attached to the tower at one end and to a galvanized steel ground rod driven into the earth at the other end. The counterpoise wires are installed at a minimum depth of 12 inches in uncultivated soil, 24 inches under roads, and 30 inches in cultivated soil. A trencher or a vibratory plow is normally used for this installation. If solid rock is encountered, the wire is usually laid in cracks or on the surface, in which case loose rock or soil is placed on the wire to hold it down.

Conductor Installation

Guard structures are built adjacent to highways, railroads, powerlines, and similar barriers to help prevent damage or interference during stringing. Equipment used to erect guard structures include power auger trucks, pole trailers, and crew-haul vehicles. Four or five persons can normally erect a guard structure.

Conductor pulling sites are required about every 3 miles along the line. A lot of traffic and activity occurs at these sites. Equipment employed includes wire trailers, pullers, tension machines, crawler tractors, and crew-haul vehicles. A stringing crew normally consists of eight to twelve employees, but the number may vary.

Prior to stringing, the handlines, insulator strings, and stringing sheaves are installed on the towers. This may be done when the towers are erected or after they are up.

Socklines are strung from a reel site through the sheaves to the next pulling site, often with the aid of a helicopter. A single sockline must be used for each phase of conductor to be pulled.

Conductor pulling begins after the handlines are strung. Pullers pull the conductor through the sheaves while tension machines help keep the conductors clear of the ground.

It is necessary to install splice connectors or field sleeves wherever separate conductor lengths are joined. These splices must be installed before final tensioning or sagging of the conductors.

After sagging, the conductors are marked and installed in the assemblies used to attach the conductors to the insulator strings. This operation is referred to as clipping. The subconductors within each phase are then spaced by means of spreader bars. Jumpers are made up and installed at all deadend towers. Each of these operations requires a four or five-man crew.

After the substations are built and the required line switches, oil circuit breakers, and other equipment installed, the lines are energized for testing. If the lines pass the tests, they are ready for operation.

Cleanup and Restoration

Each construction phase is followed by a cleanup. Final cleanup involves the restoration and rehabilitation of the right-of-way. If practicable, the right-of-way is restored to its original condition. The crews and equipment are similar to those used in clearing and excavation. All debris, unused material, and unneeded equipment is removed. The last of the vegetation is disposed of or scattered over open areas. Soil is replaced where severely disturbed on roads, tower sites, borrow pits, and other sites. Seeding or planting is done. Erosion protection is developed. If needed, fertilizer and mulch are used. Temporary roads are obliterated or closed with barriers and signs. Permanent roads are brought up to standards. Final fence, gate, and cattleguard repairs or modifications are made.

Operation and Maintenance Characteristics

Maintenance includes all functions needed to keep the lines and associated facilities in operation throughout their lifetime. Some maintenance, such as road maintenance, is required during and after construction of the lines. Other maintenance includes line patrol or inspection, vegetation management, and structural and electrical maintenance. These operations are carried out on both a scheduled and emergency basis.

BPA's program to control vegetation includes the use of herbicides. They are usually applied on a cyclic basis on tall plants that could be a hazard to the safe operation of the transmission line, or periodically on noxious weeds in cooperation with landowners and local weed control districts. Herbicides are also used on a selective basis to treat stumps that tend to resprout.

Normally, vegetation control does not begin until several years after the line has been established. The method of control depends upon a number of considerations, including type of vegetation, prevailing weather, accessibility of the terrain, economic cost, effectiveness, and

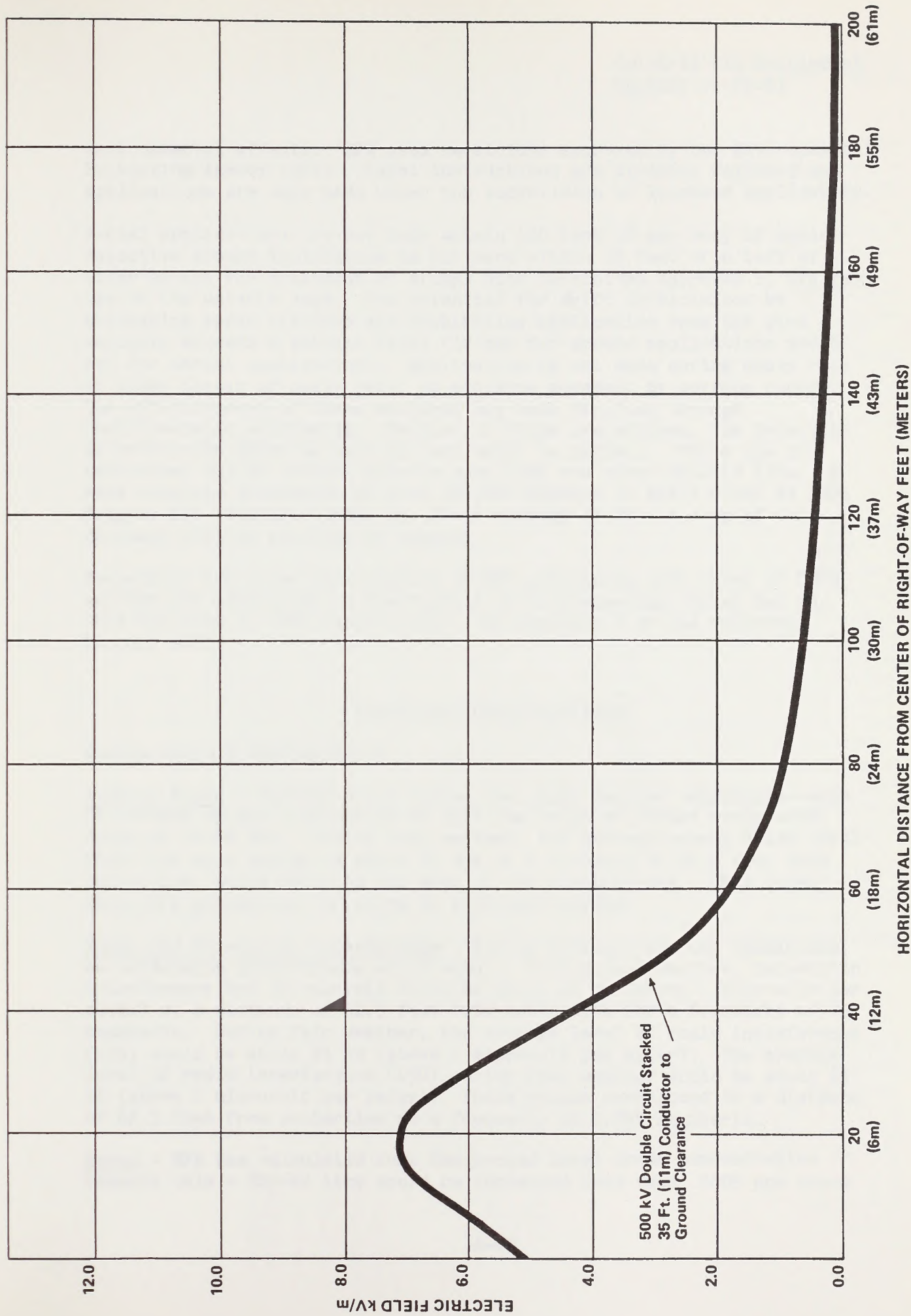


FIGURE A3 - MAXIMUM CALCULATED ELECTRIC FIELD STRENGTH LEVELS AT 1 METER
HEIGHT ABOVE GROUND FOR BPA 500 kV TRANSMISSION LINES

environmental effects. BPA uses herbicides approved by the Environmental Protection Agency (EPA). Label instructions are strictly followed and applications are only made under the supervision of licensed applicators.

Aerial applications are not made within 100 feet of any body of water. Selective ground application is not made within 10 feet of a body of water except for treatment of stumps with herbicides approved by EPA for use to the water's edge. The potential for drift is minimized by thickening spray mixtures and prohibiting application when the wind velocity exceeds a certain level (10 mph for ground applications and 6 mph for aerial application). Application is not made during heavy rain or under threat of heavy rain, to minimize movement by surface runoff. The effectiveness of these measures has been verified through post-treatment monitoring. Because of these precautions, the potential of herbicides entering into surface water is minimal. BPA's use of herbicides has no adverse effects upon fish and other aquatic life. A more complete discussion of this subject appears in BPA's Final FY 1981 Program EIS (DOE/EIS-0060), pp. IV-25 through IV-71. A copy of this document will be provided on request.

Procedures for close coordination of BPA activities with those of USFS and BLM are identified in Memorandums of Understanding (dated May 23, 1974 and June 7, 1967 respectively; see Appendix F of the Colstrip Project EIS).

Electrical Considerations

Double-Circuit Configuration

Audible Noise - Audible noise during the usual weather conditions--some 96 percent of the time--would be near the range of normal background noise at 30-40 dBA. During foul weather, the average hourly noise level (L50) for this design is about 51 dBA at a distance of 62.5 feet from centerline, which would be the edge of the right-of-way. This level meets EPA guidelines for noise in a 24-hour period.

Radio and Television Interference - During ordinary weather conditions, no television interference would occur. During foul weather, television interference due to rainfall would be about 24 dB (above 1 microvolt per meter) at a distance of 62.5 feet from centerline for a frequency of 75 megahertz. During fair weather, the average level of radio interference (L50) would be about 46 dB (above 1 microvolt per meter). The average level of radio interference (L50) during foul weather would be about 63 dB (above 1 microvolt per meter). These values correspond to a distance of 62.5 feet from centerline at a frequency of 0.834 megahertz.

Ozone - BPA has calculated that the ground level ozone concentration beneath this a 500-kV line would be increased less than .0005 ppm above

surrounding levels by the line. Ozone produced by corona on transmission lines is difficult to measure. The amounts are small, they disperse rapidly, and ambient levels vary widely.

Electrostatic and Electromagnetic Field Effects - Shrubs, trees, fences, distribution lines, or other objects that normally stand on or near the right-of-way reduce the strength of the electric field. For the selected configuration, the electric field would not exceed 7.1-kV per meter, which would occur at a point 20 feet from centerline near midspan. At 62.5 feet from centerline, the ground gradient would be about 1.7-kV per meter (see Figure A-3).

For a further discussion of the electrical and biological effects, see Appendix C.

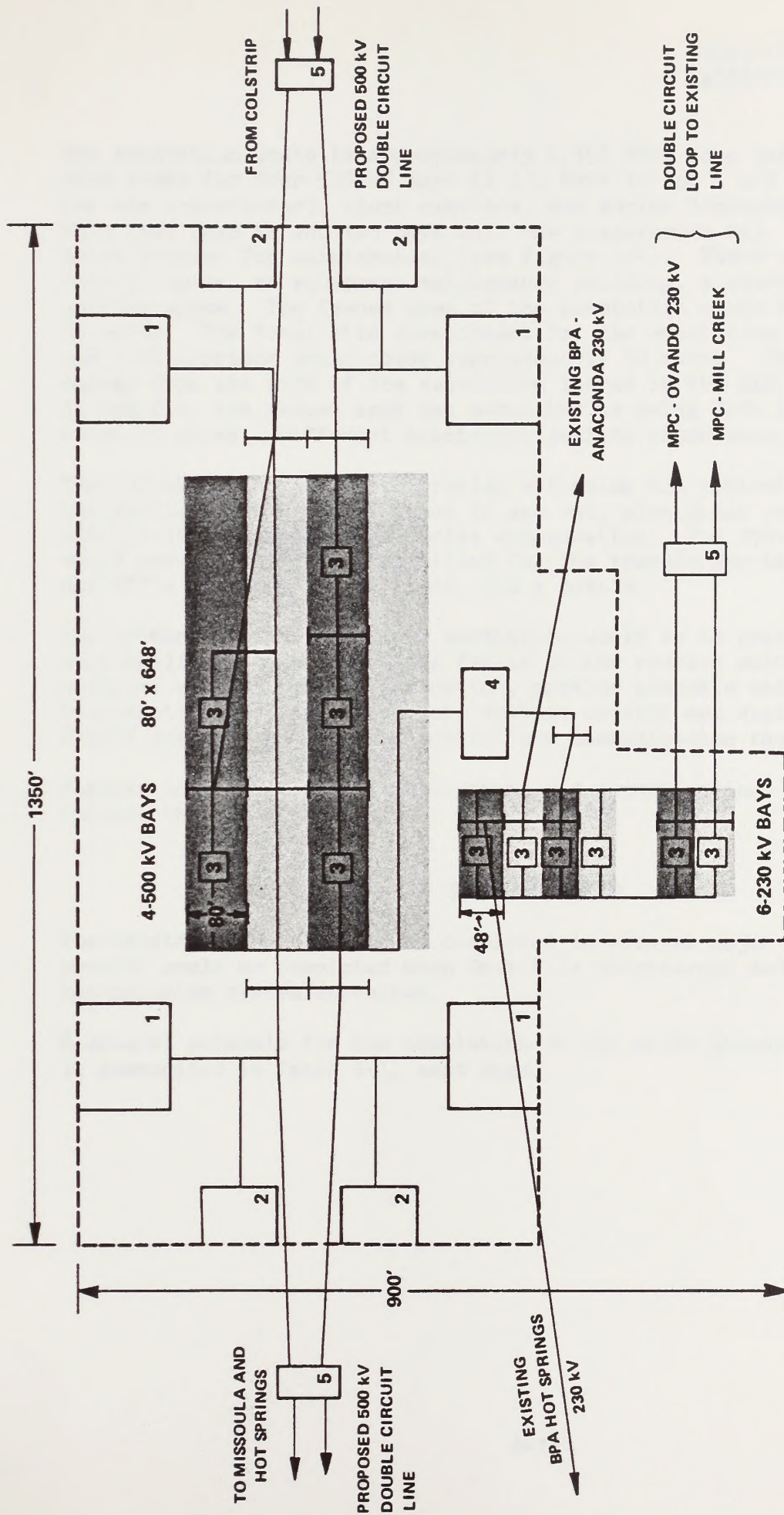
SUBSTATIONS

Substations may perform one or more of the functions of (1) control, (2) electrical compensation and (3) distribution of bulk electric power from transmission lines. They may contain circuit breakers, shunt reactors, series capacitors, and transformers as well as related control, metering, and communications facilities. The control function consists of switching and terminating transmission lines of the same voltage. Compensating for the inductance and capacitance inherent in long transmission lines is performed by shunt reactors and series capacitors: shunt reactors limit the voltage rise along the line, thereby maintaining good voltage regulation; series capacitors compensate for the inherent inductance in the line and provide for more electrical transmission capacity from a given line. The transformation function consists of reducing the voltage level so that power may be retransmitted or distributed locally. Substation functions have been combined in the proposed system.

Substations provide the locations for (1) equipment to compensate for undesirable electrical features associated with long transmission lines, (2) equipment for planned or future power withdrawal, and (3) electrical switches to enhance system reliability and safety.

SUBSTATION CONSIDERATIONS

The substation for all alternatives would be a major 500/230-kV substation in the Deer Lodge Valley, near Garrison or Gold Creek, Montana (Garrison Substation). It would connect the double-circuit 500-kV line to BPA's Hot Springs-Anaconda 230-kV line and MPC's Hot Springs-Ovando-Anaconda 230-kV line by looping them into the new station, thereby reinforcing both BPA's and MPC's 230-kV system in the area.



LEGEND

Substation 'Bays'



- 1 - Series Capacitor
- 2 - Reactor
- 3 - Circuit Breaker
- 4 - Transformer 500/230 kV
- 5 - Transmission Tower

FIGURE A-4
PROPOSED GARRISON SUBSTATION PLAN
COLSTRIP PROJECT

The substation would be approximately 1,350 feet long and 900 feet wide, with space for four 500-kV bays (1 1/2 bays in and 1 1/2 bays out and one for the transformer), shunt reactors, and series compensation, six 230-kV bays (two bays in and two bays out, one transformer bay, and a bus tie or spare breaker for maintenance) (see Figure A-4). There would be a control house, an equipment maintenance building, a storage yard, and parking space. The fenced area of the substation would be approximately 35 acres. The total site development for the substation, compensation, and line corridor would cover approximately 50 acres. This is a slight change from the size of the substation listed in the EIS, page 3.0-3.3. In the EIS, the fenced area was described as being "500 by 1800 feet" for about 21 acres. Different substation designs cause such size variations.

The 500-kV switchyard would provide switching and control facilities for the double-circuit 500-kV lines in and out, plus shunt reactors, a 500/230-kV transformer and series compensation. The 230-kV switchyard would provide switching facilities for the transformer bank, both BPA's and MPC's existing 230-kV lines, and a bustie.

The primary reasons for a new substation would be to provide sectionalizing in case of line faults or for routine maintenance of line sections without loss of generation, provide adequate and proper compensation for power transfer, voltage control and stability; reinforce 230-kV systems; and provide control and communication facilities.

Vegetation control at BPA substations and communications facilities would include the use of herbicides.

TIME FRAMEWORK

The Colstrip Project would be completed in several major phases. The project would be completed when Unit 4 is operational and the entire transmission system energized.

A general schedule for the completion of the major phases of the project is summarized in Table A-1, next page.

Table A-1. Major Project Phases
Townsend-Garrison 500-kV Double-Circuit Transmission Line

Phase	Completion Date
Supplement to Colstrip Project EIS Record of Decision.....	August 81
Centerline Environmental Analysis.....	August 81
Project Plan for Land Grant on FS/BLM Lands.....	December 81
Land Appraisal.....	January 82
Land Acquisition.....	July 82
Surveying/Mapping.....	Sept-Oct 81
Archeologic Surveys.....	October 81
Clear Right-of-Way, Construct.....	Jan-Feb 82 to October 83
Garrison Substation (500-kV).....	October 83
Unit 3 Energization.....	October 83

A P P E N D I X B

TYPICAL ENVIRONMENTAL IMPACTS

The environmental consequences caused by construction and maintenance of the 500-kV transmission line were described in Section 3.2.2 of the Colstrip Project EIS. A summary of the consequences as described in the EIS appears below. For a complete discussion of transmission impacts as they pertain to the Colstrip Project, please see the Colstrip Project EIS. Data maps to accompany these discussions may also be found in Section 3.2.2 of the Colstrip Project EIS. Nine of the 17 maps are included in Appendix E.

Climate

Climate will not be affected. Ground-level wind speeds, ground-level humidity, and soil temperatures will change in these areas where dense vegetation is removed. The most extensive changes at ground level will occur in corridors with the greatest acreage of forest vegetation.

Final location of the transmission line will consider the potential for high winds, snow depth, icing conditions, and lightning hazards, but no data is available to pinpoint these impacts.

Air Quality

Dust from traffic on access roads and the burning of slash from clearing operations will temporarily affect air quality. Gaseous and particulate pollutants from vehicle and equipment exhausts will be temporarily increased in local areas of work.

Generally, the dust will settle or be dispersed by winds. Dust accumulating on nearby vegetation could interfere with growth until removed by rain. Slash burning will conform with local, State, and Federal air pollution regulations.

Noise

Normal noise levels in rural areas will be substantially increased during construction, but the increase will be short-term. Few people other than construction crews will be affected. Wildlife may be stressed or may move from the area if construction occurs during certain times of the year. For birds, the mating, nesting, and migratory stopover seasons are

important and could be affected. For animals, winter and the spring bearing of young are important times of the year when major impacts are most likely to occur.

Corona discharge from the conductor will be noticeable to some animals and humans during the lifetime of the project.

Noise associated with maintenance will occur infrequently, and then only for short periods of time.

Noise impacts will be approximately the same, regardless of corridor alignment.

Geology

The following factors were considered in evaluating the geologic impacts of the alternative corridors: landslide potential, disruption of topography (cut and fill and site-leveling), road construction, soil-profile disruption, and revegetation potential. In general, impacts on the geology of any of the corridors under consideration will be minimal if the routes are properly located and engineered.

Soils

The degree of impact that transmission line construction would have on soils is described as a land suitability rating by the Forest Service in a report entitled "Land Suitability Patterns for Electrical Transmission Lines" (December 1976). These land suitability ratings (good, fair, or poor for transmission line construction) were applied to all potential corridor segments. The number of miles of lands in each suitability category along each corridor was then multiplied by weighting factors and summed to produce an overall land suitability impact score. This scoring technique identifies corridors with greater soil impacts as having greater land-suitability impact scores.

Water Resources

The most significant effects on surface-water systems will be an increase in sediment and a corresponding increase in turbidity. This is inevitable in all surface waters crossed by the transmission lines. The increase would be of greatest magnitude during the first 2 years of construction and would persist to a lesser degree as long as the corridor and access roads were maintained. Other impacts on surface water would

be increases in water yield, dissolved solids, and possibly water temperature. These impacts are likely to be less than the impacts from increase in sediment.

In order to compare the alternative corridors, surface-water scores were assigned on the basis of the number of miles of high, medium, and low sediment risk zones along each route. Larger scores indicate greater impacts.

Plants and Animals

Plants

Impacts to vegetation will occur from several sources. The use of off-road vehicles, which have become a popular form of recreation, will probably increase if the access roads are open, causing further vegetation losses. Because most grassland areas with low-growing vegetation are already quite accessible to off-road vehicles, little increase in traffic is anticipated. In the forest and shrubland areas, however, removal of the taller vegetation that previously restricted off-road traffic will increase traffic and vegetation losses. Besides loss of vegetation from traffic, human activity will increase the potential for forest and grass fires. Improved vehicle access could aid the suppression of such fires.

Impacts to the forest types from construction of the transmission lines will be similar to impacts from the clearcut-timber harvesting, which is a practice routinely followed in much of Montana. Timber harvesting, however, may be more flexible in lessening impacts (e.g., complete avoidance of sensitive areas and cable logging to reduce soil disturbance on steep slopes). Transmission line construction impacts to steep slopes could be minimized by using helicopters, but extensive helicopter use is unlikely because of the lower payloads due to high altitude. This means more trips, more fuel use, and more flight time, all of which lead to higher costs.

Impacts associated with right-of-way maintenance will probably be intermittent. It will consist mainly of removing trees that may hinder operation of the transmission line and associated activities. Tree removal should be limited to those trees that appear weak or unstable, or to those infringing on the required right-of-way clearance.

Although riparian areas should be avoided or spanned by the transmission line, impacts could occur from erecting towers, stringing conductors, and crossing streams. Impacts will vary, depending on streambank stability, stream size, flooding characteristics, extent of soil disturbance, and

time of year. In areas with little or no scarification, rutting, or removal of herbaceous vegetation, adverse impacts to riparian vegetation will be temporary.

Impacts will be least in riparian zones along large streams with regular flow. Soil disturbance or removal of vegetation along streams with significant streamflow fluctuations (e.g. in mountainous regions during spring runoff) may have far-reaching and long-lasting impacts on the environment.

Logging and road construction cause severe disturbances in the riparian zone. Removal of vegetation results in erosion. Once streambeds begin to erode, the more forceful floodwaters accelerate erosion of the stream channel; this results in removal of other vegetation and debris, increasing silting in the streams. A significant possibility of such floods is increased by removal of substantial numbers of older mature trees that serve as seed sources. Impacts from disturbance will be greatest in the early spring just before spring runoff peaks, since herbaceous vegetation will not have had time to recover. Impacts will be less if disturbance occurs after spring flooding.

Construction impacts on vegetation in the shrub type area will be short-term, and will occur primarily during access-road clearing in the right-of-way. Cuts and fills will likely be less in the shrub type than in the forest types because of differences in topography. Understory vegetation may take longer to recover, however, because it is in lower precipitation zones.

Erosion on steep slopes in shrub types could be significant if the soil is disturbed by scarification. Loss of topsoil will restrict the kinds and amount of vegetation that can reestablish itself. Impacts from maintenance will probably be short-term. Maintenance vehicles compact the soil locally, inhibiting root growth.

The numerical impact rating scores for vegetation cover within the study area were determined by weighting forest and riparian (wetland) impacts more heavily than shrub and grassland (rangeland) impacts. The least weight was given to agricultural lands, which already represent a disturbance to natural vegetation.

Areas of high impact ratings occur in forested or riparian areas, although it should be pointed out that acreages and, hence, impact scores, of riparian vegetation are only for large areas along major streams or water bodies. Riparian areas along smaller streams with high importance to wildlife but with less livestock grazing potential acreage were not included in the numerical analysis.

Animals

Impacts to animal species throughout the study area will vary with the size and density of the populations, the types of habitat altered, the duration and extent of the alterations, and the ability of various species to adapt to change. Significant variations in impact are expected to occur between forested and more open habitat types.

The effects of overstory removal in forested habitat types are mixed. Certain animal species benefit while others do not. A right-of-way in forested habitat can be compared with a forest clearcut; clearcuts produce additional forage for herbivores such as deer and elk, especially during winter. The ecotones created by the cut generally are considered to support a greater diversity of species than either of the adjacent habitats alone. Apparently, however, there is little or no need for additional browse in Montana, except during winter when browse is locally limited. A more critical concern appears to be the decline in big game security areas associated with the decline in forested habitat. Also, ecotones may not support greater numbers of species if adjacent habitats contain greater vegetation stratification, as would likely be the case in forests in the study area. Certain ecotones support equal or higher numbers of common and widespread species than do adjacent habitats, mainly because common species generally have broad tolerance-ranges, high dispersal rates, and high reproductive potential. The uncommon, less adaptable species with specific habitat requirements may not occupy an ecotone at all, and a right-of-way may encroach on its habitat. Studies of bird populations in western Montana indicate little or no increases in total number of species along rights-of-way, even with increases in the number of common species.

Riparian habitats, which are among the most sensitive to environmental change, often support higher populations of birds than do other forested types. Manipulations in these habitats can be especially detrimental to breeding birds. As in the case of forest habitats, overstory removal and subsequent ecotonal effects will not be of sufficient benefit to overcome loss of habitat for restricted species.

The right-of-way, as a clearing, may act as a barrier to movement or dispersal of small sedentary species and secretive species reluctant to cross open expanses. Certain forest interior birds that require expansive closed-canopy forests may be somewhat disoriented by the right-of-way. Large stands of mature deciduous or coniferous forests are important and generally support more species of birds than do smaller stands or divisions of larger stands. The impact of fragmenting critical habitats (i.e., wintering, breeding, and den sites) of secretive or uncommon species such as the grizzly bear, mountain lion, lynx, marten, and Goshawk, as well as critical security areas for big game species

(notably elk and mule deer), are of considerable concern. Fragmentation can greatly affect secretive species having large home ranges or territories that are often tenaciously defended. One result of disruption of home ranges is reduced carrying capacity and populations.

Birds

Like mammals, birds will be affected more in forested habitats and, to a lesser degree, in shrub and grassland habitats. Tree-nesting species, which include representatives of practically all groups, will be especially stressed by overstory removal as well as by removal of snags and trees outside the clearing. Populations of game birds that show an affinity for open areas within forested habitats may increase, although hunting pressures along the right-of-way may cancel any increases. Increased hunting opportunity, although considered by many to be a positive impact, may prove detrimental to game species if not properly managed. Waterfowl should be affected only slightly by the right-of-way, provided that the important breeding, staging, resting, and wintering grounds widely distributed throughout the study area are protected.

None of the upland game birds is expected to benefit from the project.

Nongame species, especially secretive forms, may leave grounds adjacent to the right-of-way and thus be lost to the locale. More common and adaptable species (e.g., magpies) will eventually replace those species lost.

Fish

Fish may be affected by erosion of stream banks, sedimentation and turbidity, and increased insolation of surface water. Erosion of stream beds accompanying loss of riparian vegetation could destroy microhabitats of aquatic plants and invertebrates (fish food). Sedimentation and turbidity, although mitigated as much as possible, could scour microflora and fauna from the habitats as well as interfere with light penetration and photosynthesis, limiting the availability of food. Also, cold-water game fish, especially, are not tolerant of high turbidity, particularly in the egg and larval stages. Spawning gravels can be covered and a year's fish production lost.

In general, the greatest fish and wildlife impacts are projected to occur in native forest habitats and along rivers in steep-sided valleys. Fish and wildlife of open and presently disturbed areas are expected to experience less impact.

Threatened and Endangered Species

Plants

The most significant impact to the proposed (threatened and endangered) Grindellia howellii would be destruction of undiscovered stands. All corridors pass through Powell County, where the species has most recently been reported.

Animals

Two threatened and endangered birds (Bald Eagle and Peregrine Falcon) could strike the transmission lines or towers during flight, although the chances are few. Breeding of the Bald Eagle and Peregrine Falcon could be affected by nest removal or disruption of breeding activities.

A grizzly bear was killed within the Designated Corridor on the west side of the Continental Divide in May 1980. The habitat is suitable for grizzlies. This type of sighting is considered "accidental", and does not indicate that a viable population exists in the area. The biggest threat to these creatures would be disturbance caused by human activity and increased access. However, little additional impact is expected to occur.

Cultural Resources

Impacts of transmission line construction, operation and maintenance on cultural resources will be several. Archeological and paleontological sites may be destroyed (after salvage) during construction of access roads and towers, while other sites may become more accessible to amateurs and be altered or destroyed by them. The viewshed of cultural resource sites will be altered by the presence of towers and cleared rights-of-way, and the context in which sites are interpreted will be changed by the presence of the system. The most significant impact would be loss of sites accidentally unsalvaged, since salvage before destruction at least preserves knowledge. The least significant impact would be changes in the interpretive context of sites, since detracting of their value is preferable to destruction or loss of knowledge.

Since potential impacts are based on known probabilities only, unknowns in the form of both undiscovered sites and final line location will alter the distribution of impacts considerably from what is projected here. Still, destruction of or change in the context of some sites will occur.

Esthetic Impacts

The most significant aesthetic impact of the transmission system will be visual. Noise, dust, stream sediment loads, etc., will be intermittent and variable, with increments most significant in pristine or near-pristine areas and least noticeable where existing levels are high.

Potential visual impacts are rated on a high, medium, and low scale. A high rating means that either marked corridor contrast (a corridor through a dense coniferous forest) or high tower visibility (as along a mountain ridge) is likely to occur in a highly scenic area that is frequently observed. A low rating indicates an area already modified or of low scenic quality, where contrasts of either towers or corridors would be low or observation is infrequent. Medium-rated areas fall in between.

Recreation

Recreation impact ratings are based on the suitability of an area for recreational use. Some of the components of the suitability rating are ownership, access, land form, visual quality, presence of special management areas, level of recreation use, and potential for recreation development.

Land Use

In general, the transmission system will cause only a small change in ownership patterns, since the major portion of the right-of-way will be an easement from the present owners. The amount of land lost along any of the alternatives depends on the number and type of transmission towers and use of the land. Use of land for crop production, grazing, timber production, residential, commercial, and recreational purposes varies along different alternatives, as discussed in the specific corridor analysis.

All corridors cross both irrigated and nonirrigated land. Towers could probably be sited to span farmlands in some areas where fields are small and interspersed with range or areas that are not farmed. However, there are areas of concentrated irrigation or dryland farming where it would be necessary to place towers in fields. Thus, the removal of at least some land from agricultural production would be certain for most corridors selected. Because this land would be occupied by towers, the impact would last the lifetime of the project.

If transmission lines cross irrigated land, changes in irrigation practices or limitations on future development could occur as a result of

tower locations. Wheel-type irrigation systems, including center-pivot units, cannot pass through fields where there are towers or guy lines. Special considerations for installing, operating, and maintaining all mechanized systems in proximity to power lines (e.g., grounding) are required.

Construction activities could also affect existing range improvements such as fences, cattleguards, and gates. Gates left open by construction crews or the public would cause some livestock distribution problems, although these impacts could be easily mitigated.

Another possible impact on livestock (or other grazers) is the ingestion of breakaway bolts and other small metal objects accidentally left on the ground after construction. If the metal pierces digestive organs, the animals often die.

The comparison of corridors related to rangeland resources was based primarily on potential range productivity and recovery rates. Recoverability was given slightly more emphasis than productivity because the recoverability potential of a vegetative community essentially determines the significance of any disturbance.

The transmission system will cause greater loss to forest production than to other crops. Grazing and agriculture can still occur in the cleared right-of-way, but commercial forest production is limited to Christmas trees.

Transmission lines can impede certain forest management practices including high-lead, or cable logging. Locating the transmission towers on favorable terrain in mountainous areas (e.g., on ridge tops) may prohibit logging adjacent areas because of increased logging and road cost, as in areas of steep, unstable slopes.

Social and Economic Impacts

Most of the potential social and economic impacts and benefits will be associated with construction of the transmission facilities and will last only during the 2 years of construction. Longer-term benefits and impacts will include changes in property values and tax revenues in the counties affected and changes in individual livelihood and individual quality of life.

A P P E N D I X C

ELECTRICAL AND BIOLOGICAL EFFECTS

Transmission lines produce corona and electric field effects. Corona can interfere with radio and television reception, can cause audible noise, and can produce insignificant amounts of oxidants (e.g. ozone). Electric and magnetic fields induce currents and voltages on objects near a transmission line. This can result in annoying nuisance shocks.

While an electric field is produced by voltage on the transmission line conductor, a magnetic field is produced by a current flow on the transmission line. Magnetic fields are very weak compared to electric fields. They are about the strength of the earth's d.c. magnetic field. The 0.5 gauss magnetic field beneath a 500-kV line is not as strong as the fields existing near some household appliances. Therefore, most interest and research involving transmission line fields involves the electric rather than the magnetic component.

Table C-1 lists representative levels of electrical properties for the proposed Townsend-Garrison double-circuit 500-kV transmission line. BPA has had considerable operating experience with this voltage. BPA has more than 3,000 miles of single-circuit 500-kV lines--the first began operating in 1967--and 240 miles of double-circuit 500-kV lines. Another 224 miles of double-circuit 500-kV lines are under construction.

The maximum electric and magnetic field at ground level for a double-circuit 500-kV line is no higher than that allowed for a single-circuit line. That is, two 500-kV circuits do not "add up" to a 1-million volt line. This is easily verified by measuring the field strength with a hand-held meter. Even the BPA 1200-kV prototype line, with its greater clearance from conductor to ground, produces maximum ground level electric fields equivalent to those of a 500-kV line.

Another point of clarification concerns frequency and wavelength. Electrical energy carried by a 500-kV line alternates at 60 cycles per second (60 Hz). In comparison, television transmitters operate in the 55 to 885 MHz (MHz=million cycles per second) range and microwaves are 1000 MHz and above. The wavelength of a 500-kV line is approximately 3,100 miles while wavelengths of microwaves are less than 1 foot. The shorter wavelengths are absorbed by biological material, and, in the case of microwaves, can produce heating (e.g., microwave ovens). In contrast, the extreme wavelength at 60 Hz allows the transfer of only a minute amount of energy to objects the size of a person.

Design and mitigation options to minimize adverse electrical effects have been developed from many years of utility operating experience and from numerous studies. For example, the proposed line will use the latest

design for minimizing noise production. This consists of using large diameter conductors in bundles of three for each of the line's phases. Operating experience and research indicates that the amount of audible noise produced by the proposed line would not have any major effect on people or animals. Some people, however, may find the noise annoying at times because of its high frequency components. The Department of Energy (Molino et al. 1978) and the Electric Power Research Institute (Pearsons et al. 1979) are sponsoring research to further define the effects of audible transmission line noise on people. The noise levels of the proposed line are within limits as identified by the Environmental Protection Agency.

Corona electrical noise may cause some interference with television and AM radio reception in areas near the line and remote from broadcast transmitters. However, if such interference from the line occurs, mitigation will be undertaken by BPA to restore reception. Examples of such mitigation can be found in two reports available from BPA (Loftness 1977, 1980).

Voltages induced on objects near a 500-kV line can result in annoying nuisance shocks to people or animals. To prevent such shocks, metal objects such as fences are routinely grounded by BPA maintenance personnel. For moveable objects (e.g., vehicles), lines are designed so that the maximum current a person could receive by touching the object does not exceed 5 milliamps, the level at which children can still let go of the object. This conforms to the National Electrical Safety Code. Under normal conditions, currents are much less (below 2 mA). More information on ways to prevent shocks is contained in the BPA publication, Tips on How to Behave Near High Voltage Lines. Topics covered include handling of irrigation equipment and vehicle refueling near transmission lines.

Induced voltages and currents may also affect some cardiac pacemakers designed to function by sensing the low level voltages produced by the heart (synchronous). Touching an electric tool or appliance or being in an electric field can cause weak electric currents to flow in a person's body. Pacemaker manufacturers have more recently designed their products to block most of these extraneous currents.

Extensive research conducted at the IIT Research Institute indicates that under certain conditions a transmission line electric field could affect the operation of a pacemaker (Bridges and Frazier, 1979). A small percentage of pacemaker wearers have a particular kind of pacemaker and implant arrangement that might cause them to experience such effects. (The same type of effects could be caused by leakage currents from electrical appliances).

No confirmed reports exist of a BPA transmission line having an adverse effect on a cardiac pacemaker. As a precaution, however, persons with pacemakers should not spend long periods of time beneath transmission lines without checking with their physicians to determine if their type of pacemaker is susceptible to low-level induced currents and voltages.

A person near a 500-kV transmission line will have an electrical current induced in his body. For a person 6 ft. tall, a 9 kV/m electric field would cause an imperceptible current flow of up to 0.2 mA through the person. The mean perception level through the hand for a 180-lb. person is around 1.0 mA. For a 120-lb. person, the perception level is about two-thirds of that value. Under certain conditions, some people may be able to sense the electric field from a 500-kV line through slight hair vibration on their outstretched arms. Induced currents below the level of perception are not unique to a transmission line environment. Standards developed by the American National Standards Institute limit the leakage current for portable appliances (e.g., electric drill, hair dryer) to 0.5 mA.

Questions have been raised about the possibility of biological effects from induced body currents below the level of perception. In the early 1970's, a growing interest developed about possible effects associated with long-term exposure to electric fields such as those produced by transmission lines. This was largely because of reports from the Soviet Union which suggested that workers in electrical substations were adversely affected by electric fields. Such effects, however, have generally not been reported by substation personnel or linemen in the United States or other countries.

In 1975, BPA formed a special team to conduct an in-depth review of information on this subject. Results of the review were first reported in a BPA publication of September 15, 1975, entitled Electrical Effects of Transmission Lines. The review is continuing and updated editions of the Electrical Effects booklet were completed in June 1977 and November 1978. These documents have been widely distributed.

After nearly 20 years of research in the world's industrial countries, an abundance of evidence suggests that transmission lines are remarkably benign. We have concluded there is no valid evidence to indicate transmission line electric or magnetic fields pose a health hazard. Most other published reviews on this subject (including a review by the Environmental Protection Agency) reached the same conclusion. It is usually acknowledged, however, that additional research is desirable as science advances its understanding of biological systems. Since 1975, numerous research projects involving electric fields have been initiated in the United States and several foreign countries.

The growing body of scientific information indicates that there is little reason for concern about the possible existence of long-term health effects from exposure to transmission line electric and magnetic fields. The reader is referred to the BPA booklet referenced above for background and a discussion of specific research findings pertaining to both a.c. and d.c. transmission lines. What follows is a summary of the most recent developments involving the subject of biological effects of transmission lines.

In the United States most of the research into the effects of 60 Hz electric fields is sponsored by the Department of Energy (DOE) or the Electric Power Research Institute (EPRI). The combined annual budget for these two programs is around \$5 million. Table C-2 summarizes DOE research; Table C-3 summarizes EPRI-sponsored studies.

Private contractors follow strict scientific protocol in designing and conducting the studies. Reports and publications on the research are routinely made available to the public and scientific community.

When evaluating the results of research, it is important to consider the meaning of the word "effect". For example, if a laboratory animal suddenly hears a strange noise of moderate intensity, several changes may occur in the animal. Its pulse rate increases, and hormones are secreted into the blood. If the noise stops or is not strong enough to arouse the animal, the "effect" disappears. If the noise is very loud, the effects on the animal may include severe stress and impaired hearing. Although both the temporary and severe effects are reported as statistically significant, temporary effects may have questionable biological significance in terms of impaired health.

Much of the biological research with 60 Hz electric fields suggests that laboratory animals perceive and react to the presence of the field through such means as hair, feather, or skin stimulation. In some cases, animals may be aware of the field indirectly because of shock or noise associations. Studies underway will provide more definitive information on the mechanisms associated with electric field detection by animals and the relationship of the effects to animal health.

Research on the biological effects of electric fields is underway in a number of foreign countries. In Italy, research for a 1000-kV prototype project involves studies of mice, rabbits, and dogs (Cerretelli et al., 1979). Animals are exposed to 50 Hz fields of up to 100 kV/m. Preliminary results indicated no effects at field strengths below 10 kV/m. Some changes in blood profile in dogs was noted at higher field strengths. At 25 kV/m and above, some effects on growth of rats was observed. For rodents, there were no effects on fertility or resistance to infections, and there were no birth defects from 100 kV/m fields.

Recent research in the Soviet Union has included studying effects of intermittent exposure to electric fields, a more realistic situation. The Soviets reported several effects in rats exposed to a 20 kV/m electric field for up to 300 minutes in 24 hours (Shandala et al., 1979). However, those authors concluded that the effects were slight and did not exceed the limits of physiological norms.

In addition to work with laboratory animals, research on persons who work around electrical transmission facilities is continuing. Michaelson (1979) and Mehn (1979) reviewed research with humans. They concluded that there was no evidence that electrical fields produced by transmission facilities were detrimental to human health. They believed that symptoms reported in some cases were most likely due to factors other than the electric field.

Most recent studies involving electric fields and humans have been done in Canada (Stopps and Janischewskyj, 1979); Sweden (Knave et al., 1979); Turkey (Malboysson, 1977); and the Soviet Union (Dumansky et al., 1978). Only the study in Sweden (and subsequent followup work) indicated a possibility of long-term effects. Knave et al. (1979) reported that medical evaluations of personnel who worked in 400-kV substations did not detect direct effects of the electric field on the workers. The substation workers did father fewer children, especially boys, as compared to a control group. The researchers pointed out, however, that the difference in number of children existed 10-15 years before the fathers began to work in electrical substations. The Swedish State Power Board is sponsoring followup research (Nordstrom, 1981). Preliminary results indicated a tendency in a small sample of substation workers for increased chromosome breakage and increased birth defects in offspring of such workers. Studies are continuing to determine whether the effects are valid and to clarify what aspects of the substation environment may be involved. No chromosome damage has been reported in the extensive studies of swine and rodents being conducted by Battelle Northwest.

Health effects is an issue in Minnesota where a ± 400 kV d.c. line was energized in 1979. Some persons living near the line felt that it caused adverse effects to them and their livestock (Genereux and Genereux, 1980). We are not aware of similar reports, however, from persons in Oregon or California during 10 years of operation of the ± 400 kV Celilo-Sylmar line. In the Minnesota situation, it appears that strong public opposition to design and location of the d.c. line may be a primary factor in the reported health effects. Studies by the Comptroller General of the United States (1979) Minnesota Environmental Quality Board (Banks et. al. 1977) and preliminary findings of the Minnesota Department of Health (Pettersen, 1980) show no evidence that the d.c. line is a threat to human health.

Although most human research has involved electric fields, a Colorado study suggested a magnetic field effect (Wertheimer and Leeper, 1979). The incidence of cancer patients in homes near highest current carrying powerlines increased very slightly compared to controls. A similar study done in Rhode Island, however, found no relationship between leukemia and proximity of powerlines (Fulton et al., 1980). A major problem in such studies is the measurement of actual field exposures involved.

Ecological studies of transmission lines, also continuing, indicate that in most cases if electric field effects do exist, they are very subtle, elusive, and difficult to identify. A recent interim report describes results of the ecological studies conducted at the site of the BPA 1200-kV prototype (Rogers et al., 1980). This study has been underway since 1976. During the first 2 years of the study, maximum electric field strengths were essentially the same as for 500-kV lines (i.e., 7 kV/m). No adverse effects of the field were detected on crop growth, wildlife, cattle grazing, or newly established honeybee colonies. Fir trees purposefully left near the line experienced some needle and branch tip damage. This has also been reported for trees growing too near a 500-kV line.

In 1979 and 1980, conductors in the 1200 kV test span were lowered to achieve an electric field strength of 12 kV/m. Adverse effects were observed on honeybees. These effects included possible reduced brood numbers, increased mortality, lower colony weights, increased propolization (buildup of a resinous material), and increased bee aggressiveness in established hives near the line as compared to controls. Effects were noted in fields of 8 kV/m and 12 kV/m but not in 4 kV/m.

Similar effects were reported in a study of honeybee colonies in a 7 kV/m electric field beneath a 765-kV transmission line (Greenberg et al., 1978). Those effects appeared to be related to high current levels induced in tall hives.

Results of the two studies seem to indicate that bees experienced mini-shocks within certain types of hives when induced current was sufficiently high. The effects can be essentially eliminated by placing grounded wire screens over the hives to shield the electric field.

Biological studies are being conducted at the site of an UHF test line in Indiana (Hodges and Mitchell, 1979, Green, 1979). These studies have shown that the growth of corn, oats, onions, wheat, clover, and soybeans were not affected by electric fields at strengths up to 16 kV/m.

Results of a study involving farm animals was recently reported (Amstutz and Miller 1980). This study involved beef and dairy cattle, horses, hogs, and sheep living near a 765-kV transmission line in Indiana. The

overall finding of the study was that the line did not affect health, behavior, or performance of livestock. This was based on evaluations by a veterinarian and on information provided by the farm owners. Electric field strengths involved were up to 50 percent stronger than for BPA's 500-kV lines.

There is abundant evidence that electric fields as produced by the proposed 500-kV transmission line pose no serious threat to people or animals. This does not "prove," however, that there is zero risk. No amount of research would allow that determination to be made. Such is the case with almost any aspect of our complex technological society.

A primary reason that questions continue to be raised about the possible biological effects of electric fields appears to be due to articles that periodically appear in the popular press. Although articles such as "The Menace of Electric Smog," (Ponte, 1980) may make for provocative reading, they can cause needless public concern. They typically contain technical inaccuracies, and emphasize only the relatively few studies that reported adverse effects. Statements made in such articles are seldom referenced, so it is difficult or impossible to determine the specific source for the statement. Usually, there is little or no mention of the fact that most of the electric field research has found no adverse effects.

The work of Marino et al. at the Veterans Administration Hospital in Syracuse, New York, is usually discussed in popular articles as a basis for questioning the safety of transmission lines. Dr. Marino and associates are among the few researchers who maintain transmission line electric fields are hazardous (e.g. Marino and Becker, 1978, Marino et al., 1979). Some of the findings of Marino et al. have been discredited in legal proceedings (Matias and Colbeth, 1978), questioned by scientists (Miller and Kaufman, 1978), and generally not been confirmed by the most sophisticated research presently underway (i.e., Phillips et al., 1979b).

Table C-1 - Representative Levels of Electric Field Strength, Audible Noise (AN), Radio Interference (RI), and Television Interference (TVI) Expected for Townsend-Garrison Line and Reference Lines

<u>Circuit Type</u>	<u>Conductor Size mm(in)</u>	<u>Line</u>	<u>Electric Field Strength 1/</u>		<u>Average Interference Levels (L₅₀)^{2/}</u>			
			<u>Max (kV/m)</u>	<u>ROW Edge (kV/m)</u>	<u>AN(dBA)</u> Rain	<u>RI(Db-uV/m)</u> Rain	<u>Fair</u>	<u>TVI(dB-uV/m)</u> Rain
500 kV single circuit trans-mission line	3x33.07 (3x1.302)	Ref.	8.0	2.4	51.9	65.8	48.8	26.3
500 kV double circuit trans-mission line	3x40.72 (3x1.603)	Townsend-Garrison	7.1	7.1	50.7	60.4	43.4	21.9
230 kV trans-mission line	1x35.05 (1x1.38)	Ref.	3.2	2.0	45.0	62.0	45.0	19.0

1/ Electric Field Strengths may be lower but will not exceed the values listed. Indicated values for 500-kV lines are based on line voltage of 550-kV and conductor-to-ground clearance of 35 feet.

2/ Interference levels are at 50 ft., laterally, from outer conductor, with line at 540 kV.

Table C-2 - Summary of Current DOE-Sponsored Research on Biological Effects of A.C. Electric and Magnetic Fields (Primary Source: Project Resumes Presented During a Contractor's Review, Nov. 18-19, 1980, Wash. D.C., USDOE Division of Electrical Energy Systems).

STUDY	CONTRACTOR/PRINCIPAL INVESTIGATOR	RESULTS
Rats and mice are exposed to 100 kV/m fields for up to 120 days. Hundreds of parameters are being studied utilizing thousands of animals.	Battelle Pacific Northwest Laboratories	No effects in studies of metabolism and growth, susceptibility to infection and illness, cell genetics, pathology, bone growth, cardiovascular system, and reproduction and development. Subtle effects of small magnitude were detected in studies of endocrinology, neurophysiology, hematology, urine volume, bone fracture repair, and behavior. Studies are continuing.
Microorganisms are exposed to 60 Hz electric fields to assess possible mutagenic effects.	Battelle Pacific Northwest Laboratories (F. P. Hungate)	No effects found in cells exposed to electric field levels higher than could be produced through air by a transmission line.
Ecological studies are underway at the site of the BPA 1200 kV prototype. These include vegetation, wildlife, cattle, and honeybees.	Battelle Pacific Northwest Laboratories (L. E. Rogers)	Most studies show no electric field related effects. Leaf tip burn detected on some trees purposefully left growing near the 1200 kV line. Effects noted on honeybees in 8 and 12 kV/m fields apparently related to induced currents in hives. Follow up studies are underway.
Plant and animal cells are studied to determine how 60 Hz electric fields may perturb cell systems.	University of Rochester (M. W. Miller)	Some effects observed in plant root growth. Electric field strengths were considerably higher than could be produced by transmission lines through air.
Studies are underway to determine mechanisms for biological effects from electric and magnetic fields. Tissues and whole animals are involved. Exposures include use of 450 MHz modulated with 16 Hz and 60 Hz.	Veterans Hospital Loma Linda, CA (W. R. Adey)	Some effects detected at levels as low as a few volts/m apparently frequency related. Significance of effects is being investigated.
Growth of plants near a 500-kV transmission line.	Tennessee Valley Authority (L. G. Akens)	During the 1980 study, no effects were seen in growth of cotton, soybeans, wheat, and young trees. Corn production was reduced near the line in an 8.5 kV/m field. The study will be repeated in 1981.

Table C-2 (Continued)

STUDY	CONTRACTOR	RESULTS
Possible effects of 60 Hz electric fields on growth and metabolism of mammalian cells are being studied.	Mission Research Corp., and Los Alamos Scientific Lab. (H. J. Price, R. A. Tobey)	No changes in cell growth rate with an electric field of 2.5 V/m in the cell nutrient. (This field strength could not be produced through air by a transmission line electric field.
Studies are concerned with effects of electric fields on metabolism, activity, biological rhythms, and body temperature.	Argonne National Laboratory (C. F. Ehret, R. S. Rosenberg)	Initial tests indicate mice are aroused by 25 kV/m fields. Gradual extinction of arousal occurs with successive "turn ons" of the electric field. Fields of 100 kV/m have not affected biological rhythms.
Studies involve the effects of 60 Hz electric fields on central nervous system and on behavior in rodents.	Randomline, Inc. (A. H. Frey)	Some preliminary effects have been noted at field strengths of 3.5 kV/m. The identity of an "effect" depends partly on the type of statistical test used to analyze data.
A study of the detection of 60 Hz electric fields by rats.	University of Rochester (S. Stern)	Preliminary tests indicate threshold for detection of field was 5-8 kV/m. However, detection may be influenced by cage materials.
An investigation of the possible effects of high strength 60 Hz electric fields on health and behavior of non-human primates.	Southwest Research Institute (C. F. Feldstone)	In preliminary tests, baboons were able to detect 30 kV/m fields and generally adapted to the field. No obvious deleterious effects were observed.
Effects of 60 Hz electric fields on rodents.	Veterans Hospital Syracuse, N.Y. (A. A. Marino)	Previous studies of mice and rats have indicated electric fields of 3.5 - 15 kV/m have resulted in decreased body growth, increased mortality and impaired bone fracture healing.

Table C-3 (Continued)

STUDY	CONTRACTOR/PRINCIPAL INVESTIGATOR	RESULTS
Electric field effects on nervous and endocrine system.	Tulane University	mating compared to control animals. At this time, it is not clear whether the effects are related to the electric field, an outbreak of illness that occurred earlier in the study animals, or to some other factor(s). Studies are continuing.
Epidemiological study of electrical linemen and switchyard workers.	Tabershaw Occupational Medicine Associates	Multiple generations of mice will be exposed to electric fields of 80 kV/m. Studies are preliminary. First phase of the study is to determine project feasibility and design of a large scale study.

Table C-3 - Summary of Current Research Sponsored by the Electric Power Research Institute (EPRI) Involving Biological Effects of A.C. Electric Fields (Primary Sources: Kavet 1979, Phillips et al. 1979a)

STUDY	CONTRACTOR/PRINCIPAL INVESTIGATOR	RESULTS
Effects of 60 Hz electric fields on cardiac pacemakers.	IIT Research Institute, and University of Rochester	Studies with bench tests and with baboons indicated certain kinds of pacemakers may be affected by transmission line fields. Studies with human pacemaker patients are planned.
A study to assess effects of 60 Hz electric fields on honeybees.	Bioconcern	Adverse effects were observed in some bee colonies maintained beneath a 765 kV transmission line. Effects may be related to induced currents inside hives and resulting mini-shocks. Studies are continuing to determine mechanisms for observed effects.
A study of effects of 60 Hz electric fields on plants and animals.	Westinghouse Electric Corp., and Pennsylvania State University	For plants, limited damage to sharp pointed leaves at 20-25 kV/m but no effects on growth at up to 50 kV/m. Pigeons perceived electric fields of 10-20 kV/m. Mice temporarily responded to fields of 25-50 kV/m (increased secretion of corticosterone). Studies are underway on chicken eggs and on tall growing plants.
Effects of 30 kV/m electric fields on adult swine and their offspring.	Battelle Pacific Northwest Laboratories	Preliminary results: for first generation studies no adverse effects detected in mating, fertility, gestation, number or size of offspring, growth of pregnant females and fetuses, or in blood and serum chemistry. Some effects seen in studies of neurophysiology, and behavior. Preliminary results of multigeneration studies include effects on reproduction which were not found in the DOE-sponsored rodent studies (Rob Kavet, personal communication). Effects included higher incidence of fetal malformation in exposed animals following a second breeding. Also, females conceived and raised in the electric field were less successful in

A P P E N D I X D

DEFINITION OF TERMS

Agriculture Land - Farm cropland that is tilled from time to time. Includes both irrigated and non-irrigated land.

Alluvial - Pertaining to or composed of any sediment deposited by flowing water (alluvium), as in a river bed.

Archaeological and Historic Site - Site which contains objects of antiquity or cultural values relating to history, or prehistory.

Archaeological Resources - Sites, areas, structures, objects, or other evidence of prehistoric human activities.

Bays - The space occupied in a substation by an incoming or outgoing transmission line, including transformers and switches. For a 500-kV bay, the area occupied is approximately 650 feet long and 80 feet wide.

Centerline - The center of the transmission line and right-of-way, as surveyed and staked on the ground, and used in describing right-of-way easements and grants.

Commercial Forest Land - Lands growing stands of forest trees which possess present or potential marketable value.

Community - A group of organisms which form a distinct ecological unit. Such a unit may be defined in terms of plants, animals, or both.

Compaction - The process of packing firmly and closely together; the state of being so packed, e.g., mechanical compaction by livestock or vehicular activity.

Corridor - A strip of land two miles in width, within which a transmission line could be located.

Critical Winter Range - In this discussion, the habitat of elk or deer herds which is considered essential to their survival and perpetuation.

Cultural Resources - A term that includes resources of historic, archaeological, or architectural significance, which are fragile, limited, and nonrenewable portions of the human environment.

Designated Corridor - The Townsend-Garrison Substation portion of the corridor designated by the State Director, BLM, and Region 1 Regional Forester in their Record of Decision dated September 21, 1979.

Ecotone - A transition area between two adjacent ecological communities (as forest and grassland), usually exhibiting competition among organisms common to both.

Environment - The surrounding conditions, influences, or forces that affect or modify an organism or an ecological community and ultimately determine its form and survival.

Erosion - The group of natural processes including weathering, dissolution, abrasion, corrosion, and transportation by which earthy or rocky material is removed from any part of the earth's surface.

Esthetics - Dealing with the sense of the beautiful and with judgements concerning beauty.

Evaluation Criteria - Items developed from issues that are used in reaching a decision as to the corridor selected.

Federal Land Policy and Management Act of 1976 (FLPMA) - Public Law 94-579, October 21, 1976, often referred to as the BLM "Organic Act" which provides the majority of BLM's legislated authority, direction, policy, and basic management guidance.

Federal Lands - All classes of land owned by the Federal Government.

Habitat - A specific set of physical conditions that surround the single species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover, and living space.

Historic Resources - Sites, districts, structures, objects, or other evidence of human activities that represent facets of the history of the nation, state or locality; places where significant historical or unusual events occurred even though no evidence of the event remains; or places associated with a personality important in history.

Irrigated Land - Farm cropland that is tilled from time to time and irrigated by some type of sprinkler system or gravity feed.

Issues - An item of controversy, problem area, or idea identified by the public and pertaining to the location of the 500-kV transmission corridor.

Meteorotropic Effects - Influences on animal behavior as triggered by weather at high altitudes.

National Register - The National Register of Historic Places, which is a register of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, and culture, maintained by the Secretary of the Interior.

Non-Irrigated Land - Farm cropland that is tilled from time to time and not irrigated.

Off-Road Vehicle (ORV) - Any motorized vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other terrain.

Riparian - Situated on or pertaining to the bank of a river, stream or other body of water.

Record of Decision - The decision to be made by the Administrator, BPA, the State Director, BLM, and Region 1 Regional Forester to be published as a matter of public record, listing their reason for selecting a particular corridor.

Sagging - The distance the conductor droops below a straight line between adjacent points of support.

Sediment - Fragmental material that originates from weathering of rocks and is transported by, suspended in, or deposited by water or air or is accumulated in beds by other natural agencies.

Sedimentation - The action or process of deposition of material borne by water, wind, or glacier.

Soil - The unconsolidated mineral matter on the surface of the earth that has been subjected to and influenced by genetic and environmental factors of parent material, climate (including moisture and temperature effects), macro- and microorganisms, and topography, all acting over a period of time and producing a product that differs from the material from which it is derived in many physical, chemical, biological, and morphological properties and characteristics. The immediate surface of the earth that serves as a natural medium for the growth of land plants.

Thermal Cover - Cover used by animals to ameliorate effects of weather.

Viewshed - Everything that can be seen from a given point.

Visual Resource Management Classes - Classification of landscapes according to the kinds of artificial structures and modifications which are acceptable to meet established visual goals.

Visual Resources - The land, water, vegetation, animals, and other features that are visible.

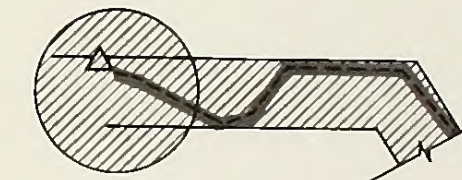
Wilderness Area - An area formally designated by Congress as a part of the National Wilderness Preservation System. Wilderness areas generally are undeveloped Federal lands which retain their primeval character and influence without improvements or human habitation.

Winter Range - That area occupied by animals during the winter months.

Withdrawal - An action which withdraws described public lands from operation of certain laws which are also described in the withdrawal order.

LAND SUITABILITY IMPACT RATINGS

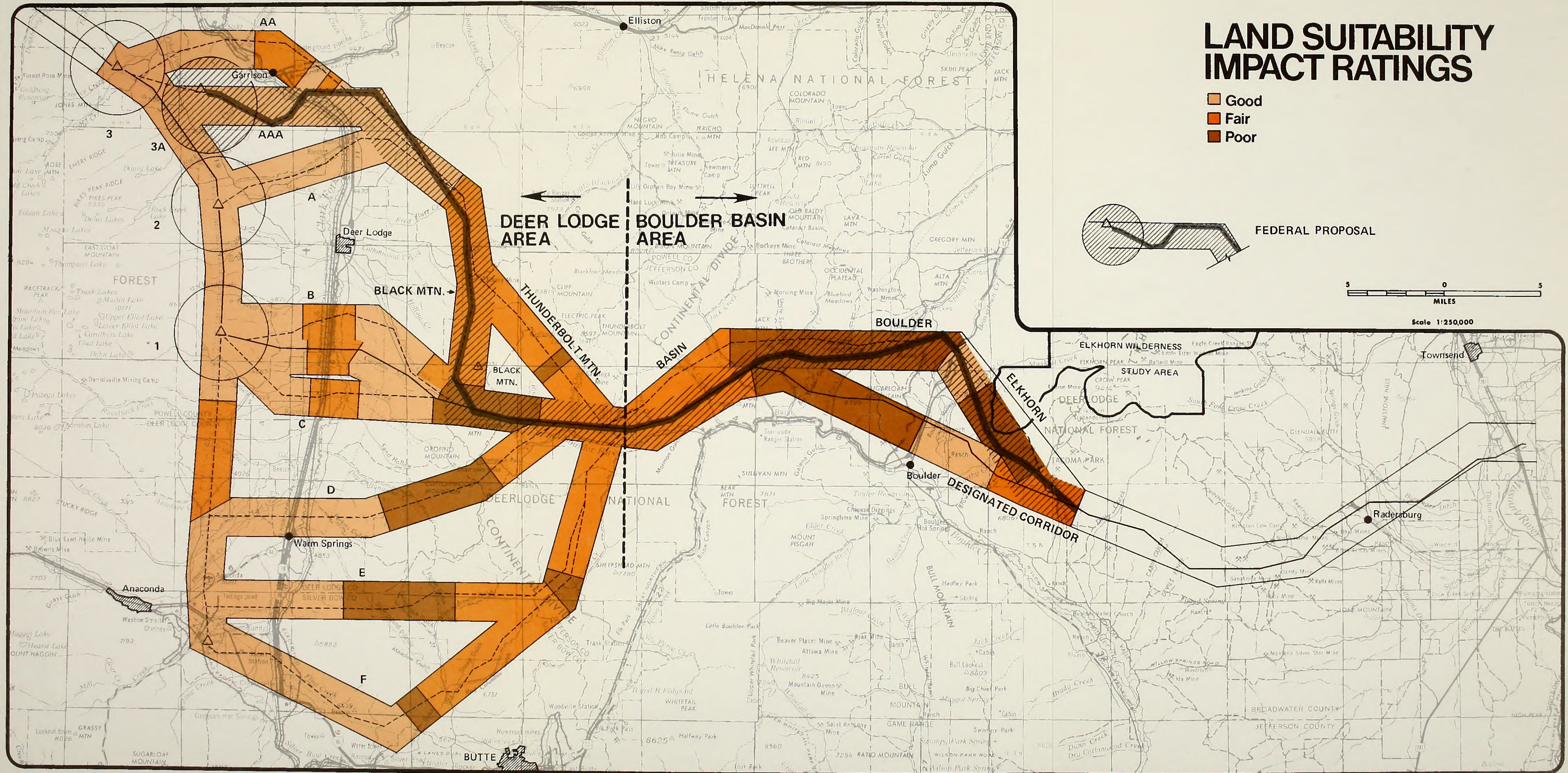
- Good
- Fair
- Poor



FEDERAL PROPOSAL

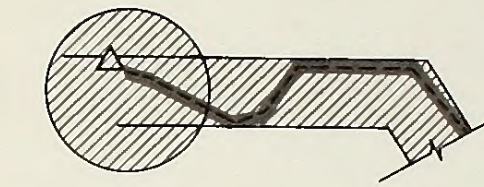


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SURFACE WATER IMPACT RATINGS

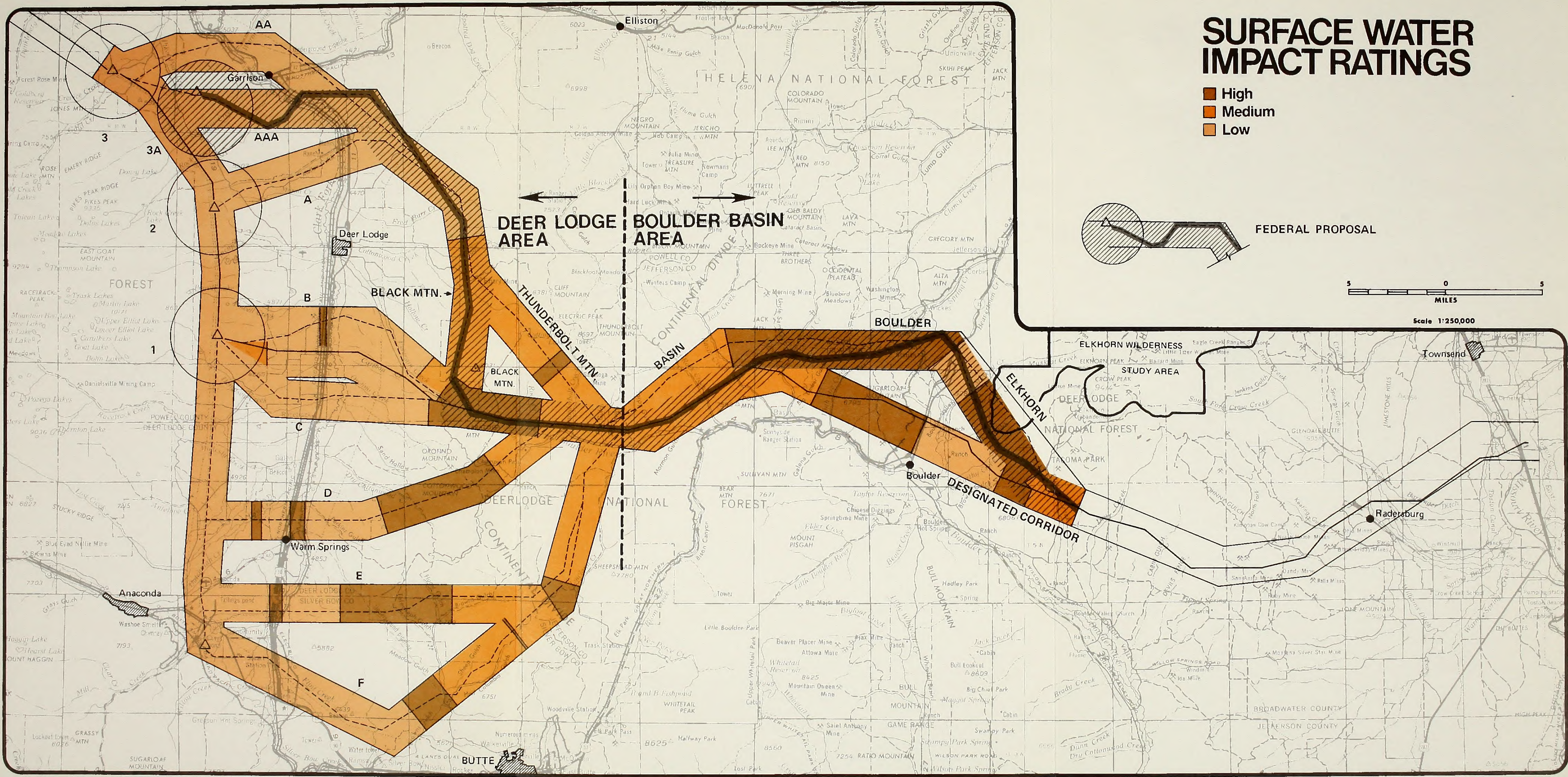
- High
- Medium
- Low



FEDERAL PROPOSAL

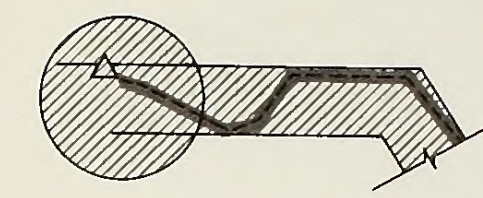


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VEGETATIVE COVER IMPACT RATINGS

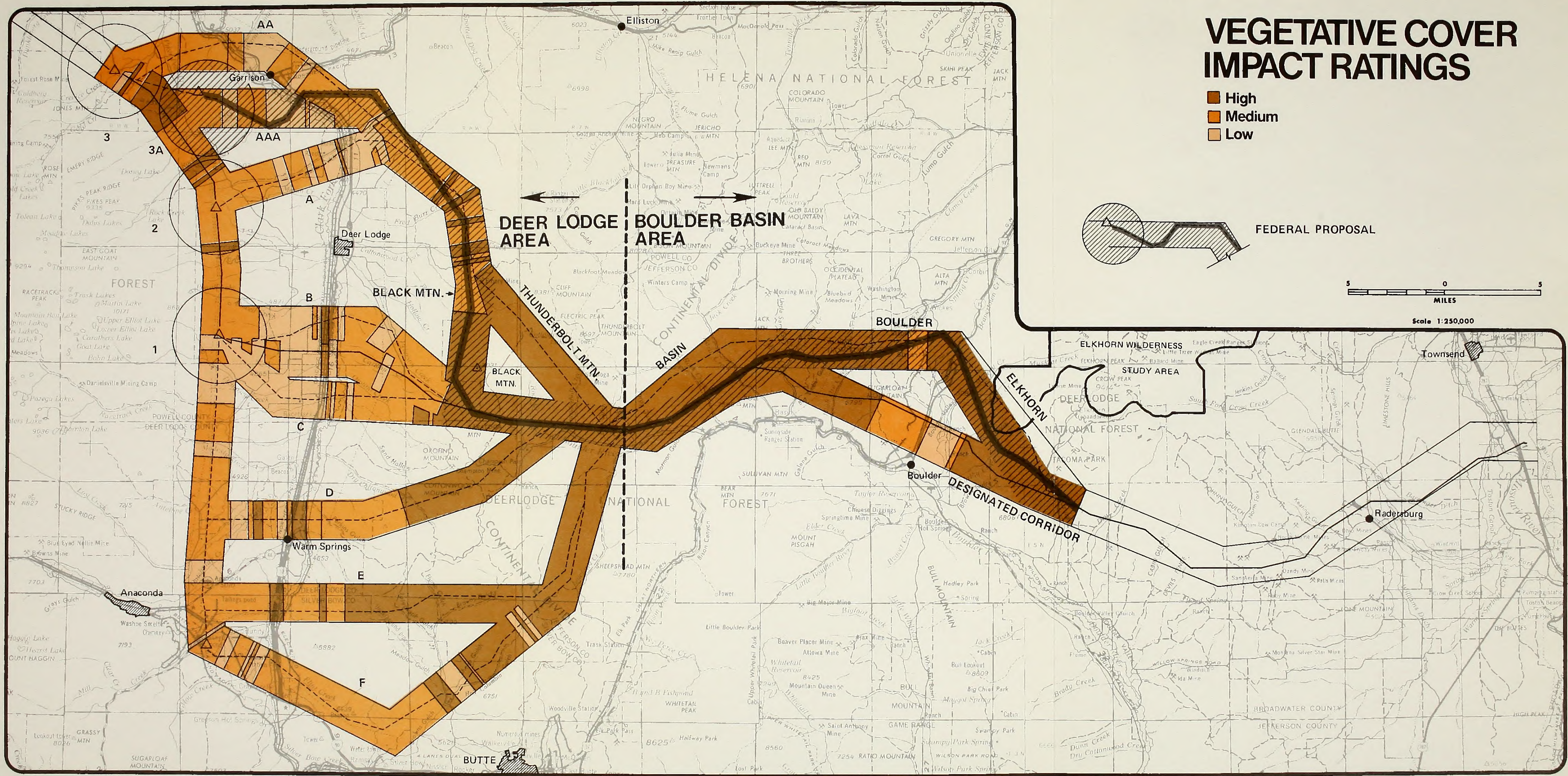
- High
- Medium
- Low



FEDERAL PROPOSAL

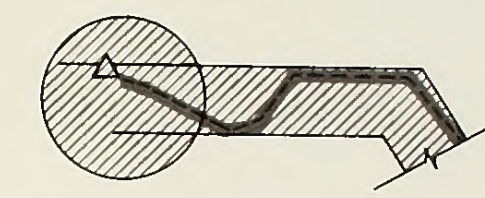


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FISH AND WILDLIFE IMPACT RATINGS

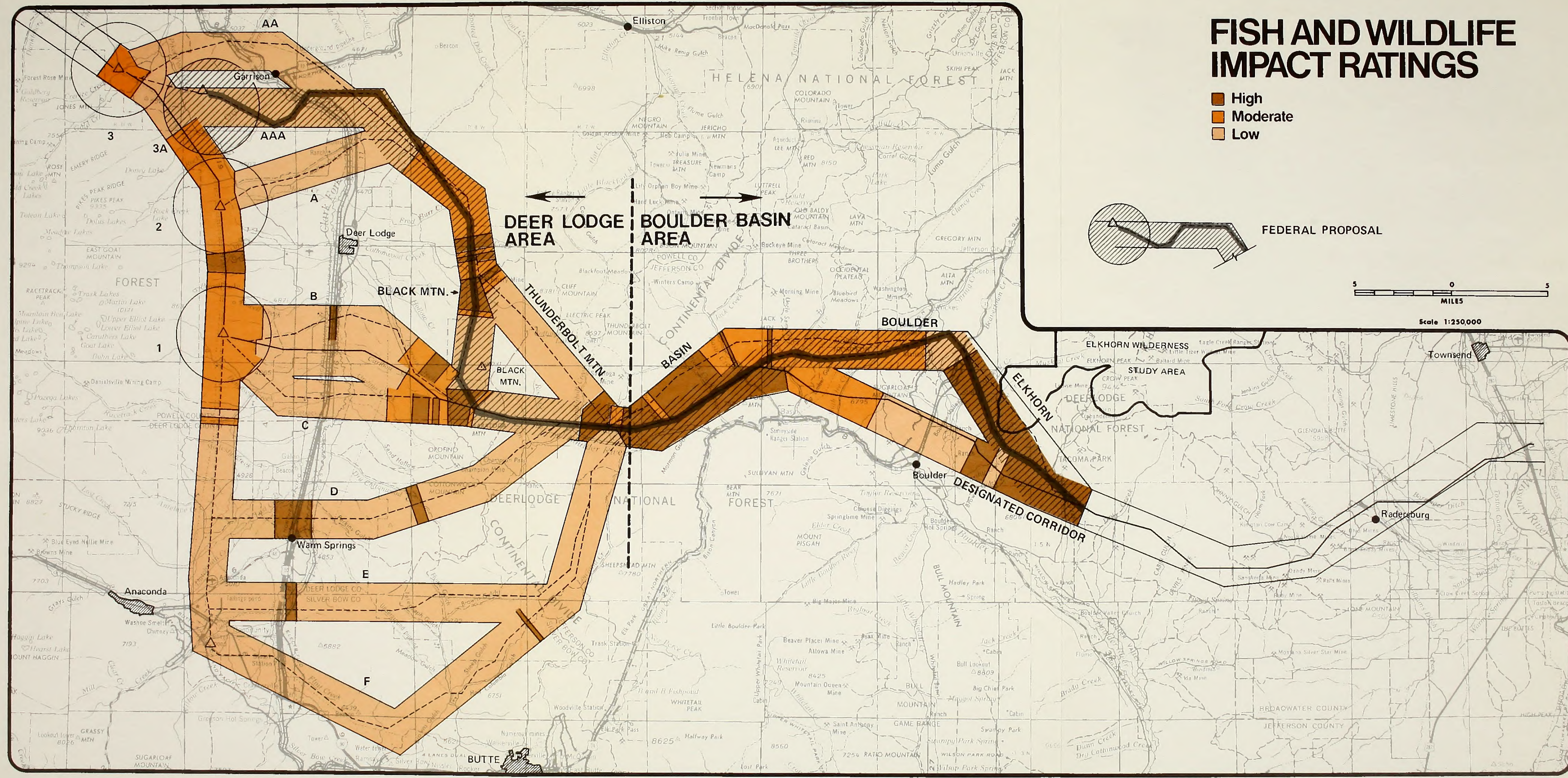
- High
- Moderate
- Low



FEDERAL PROPOSAL

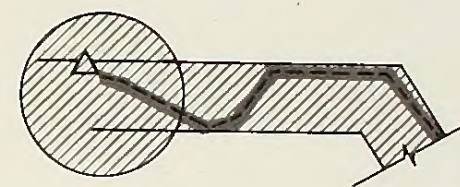


Scale 1:250,000



PREHISTORIC AND HISTORIC IMPACT RATINGS

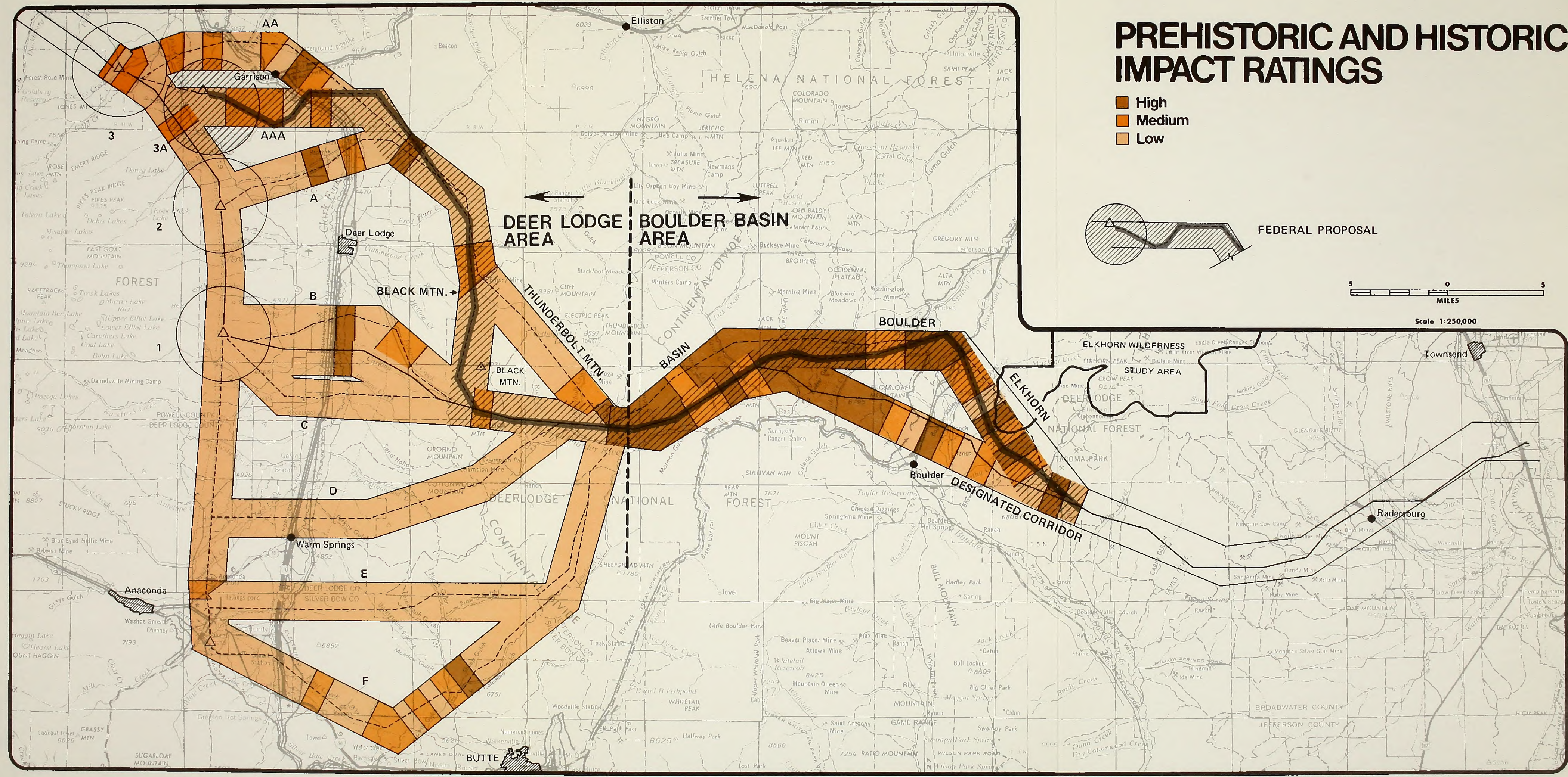
- High
- Medium
- Low



FEDERAL PROPOSAL

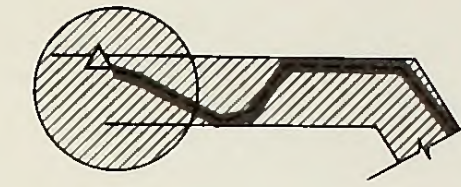


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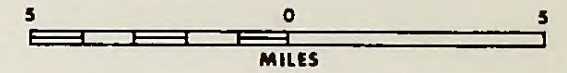


VISUAL RESOURCES IMPACT RATINGS

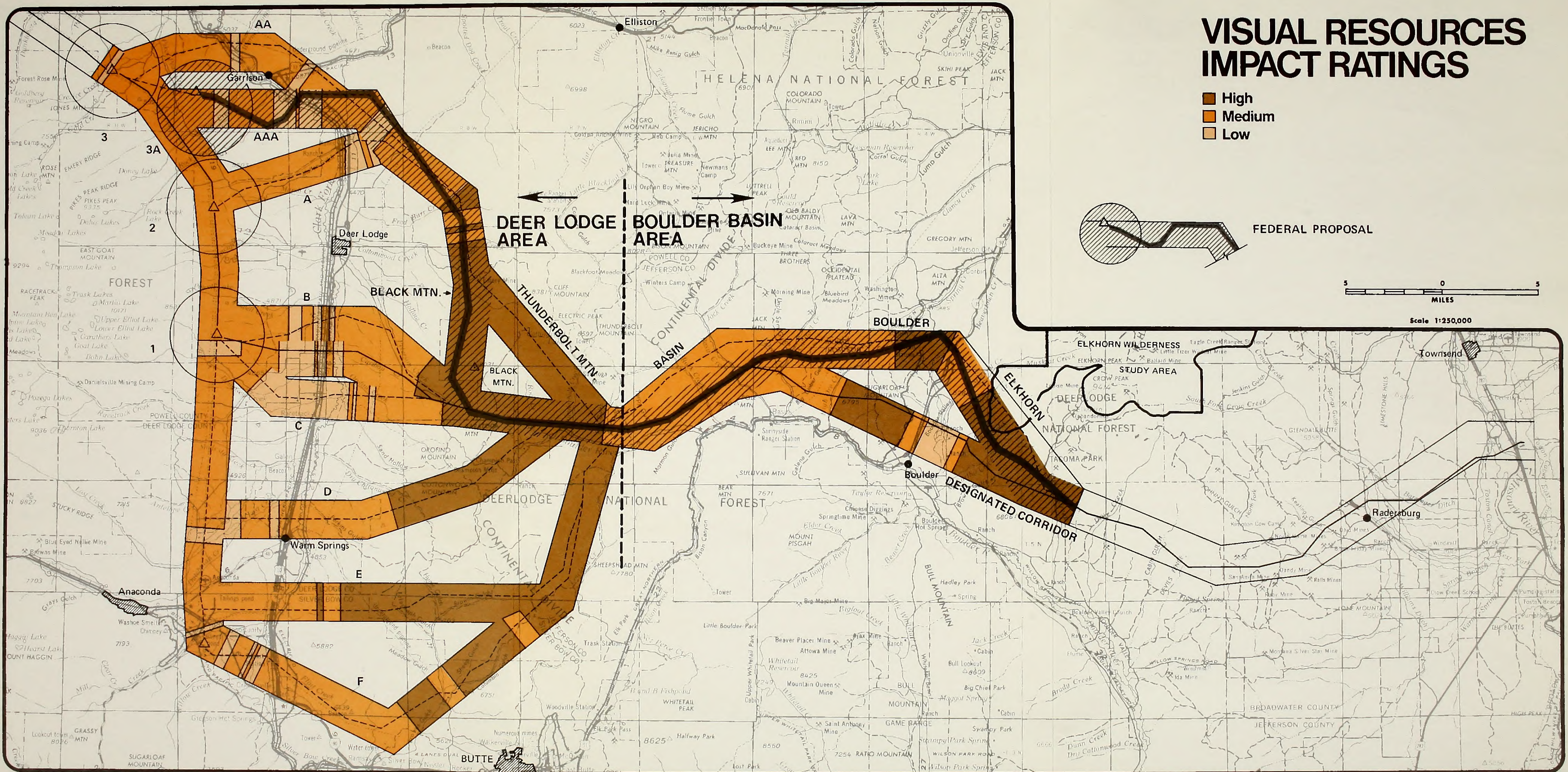
- High
- Medium
- Low



FEDERAL PROPOSAL

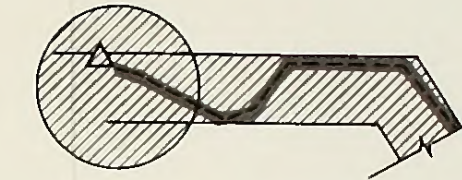


Scale 1:250,000



RECREATION RESOURCES IMPACT RATINGS

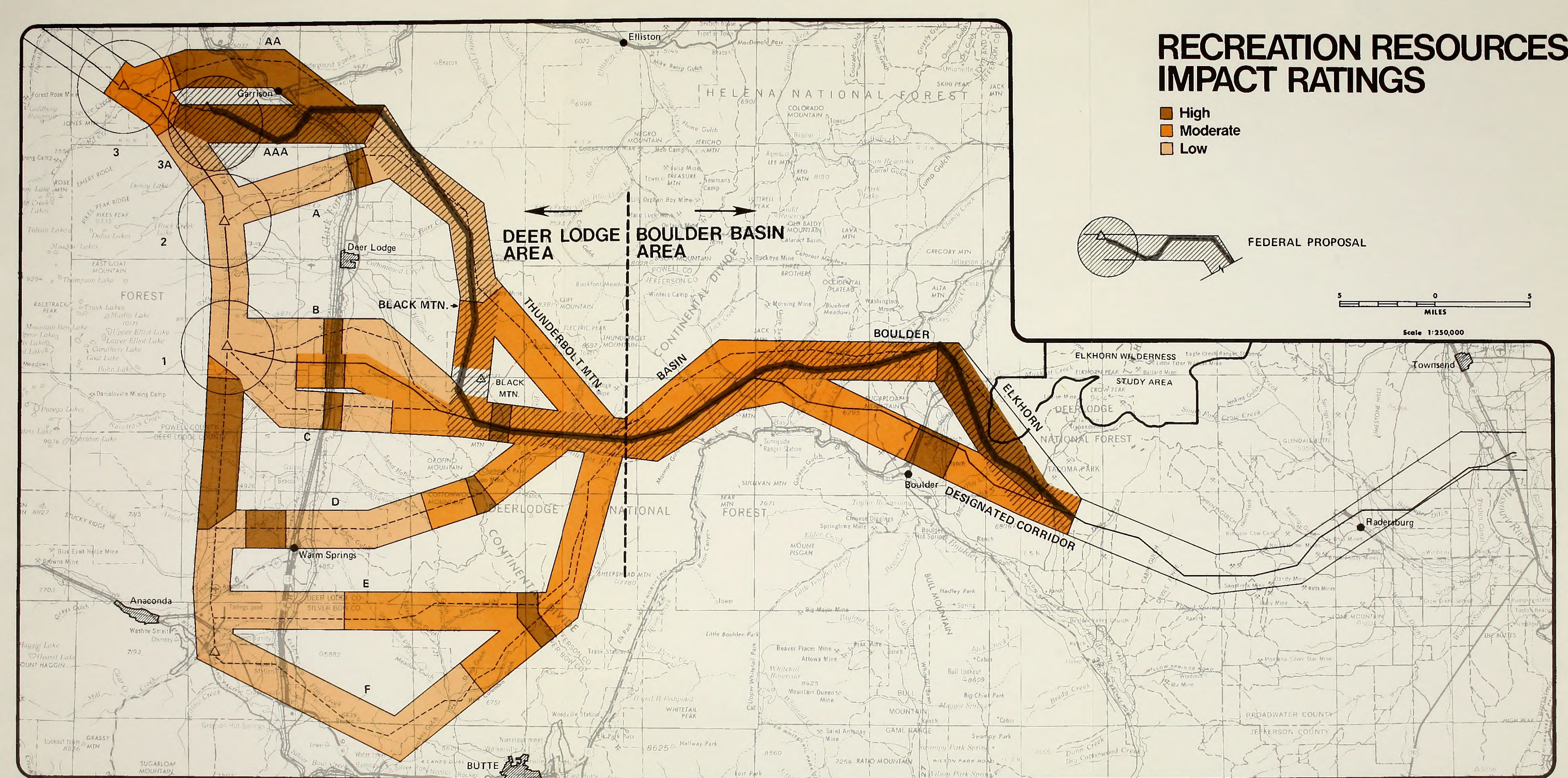
- High
- Moderate
- Low



FEDERAL PROPOSAL

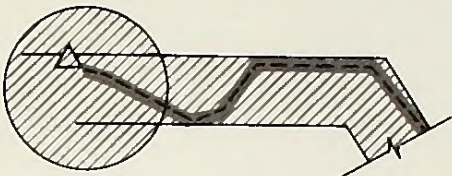


Scale 1:250,000



AGRICULTURAL LAND IMPACT RATINGS

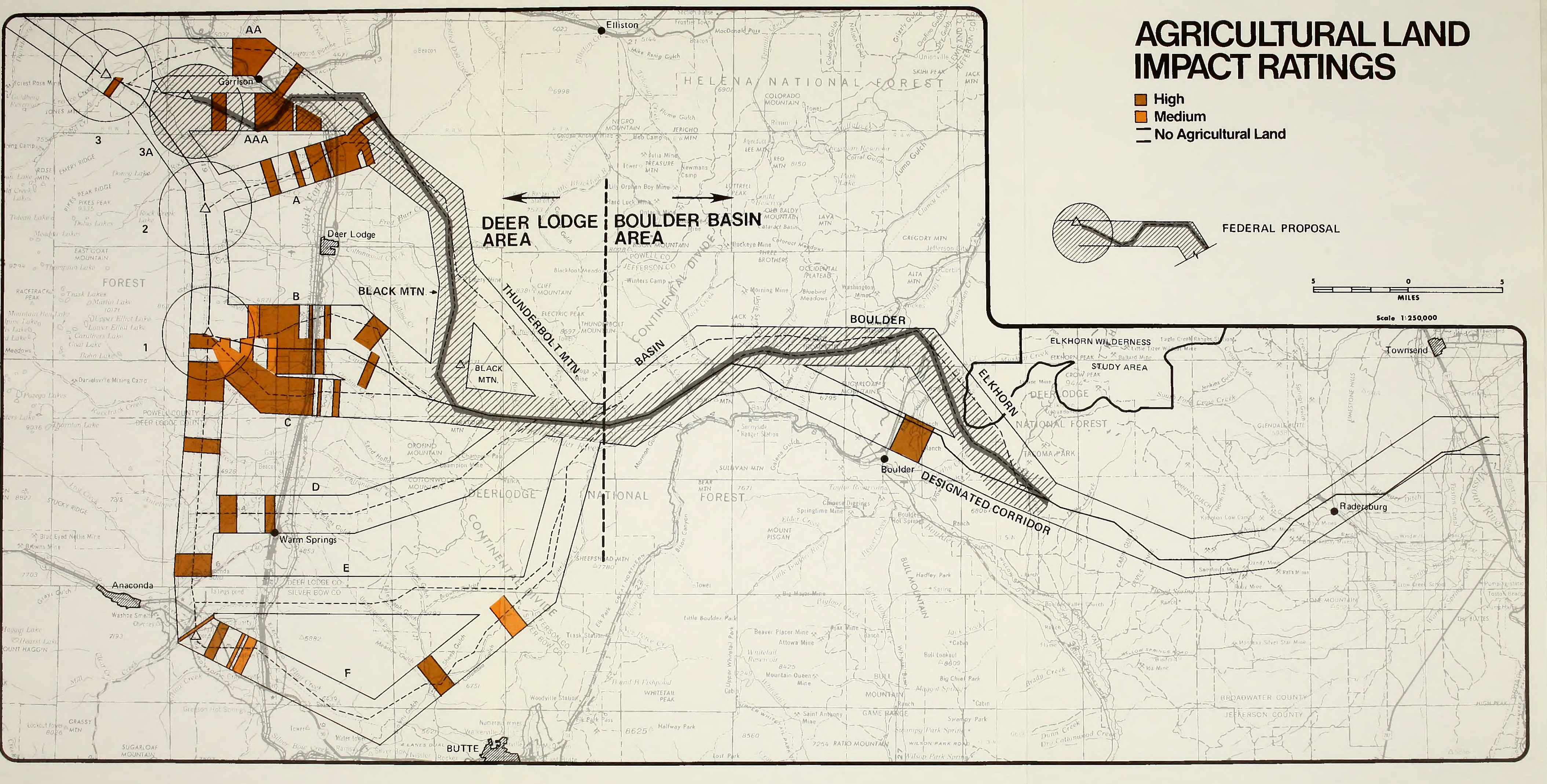
- High
- Medium
- No Agricultural Land



FEDERAL PROPOSAL



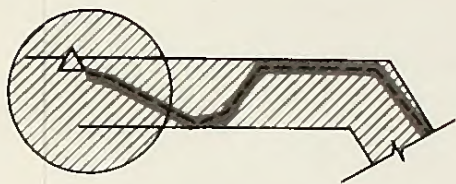
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RANGELAND IMPACT RATINGS

High

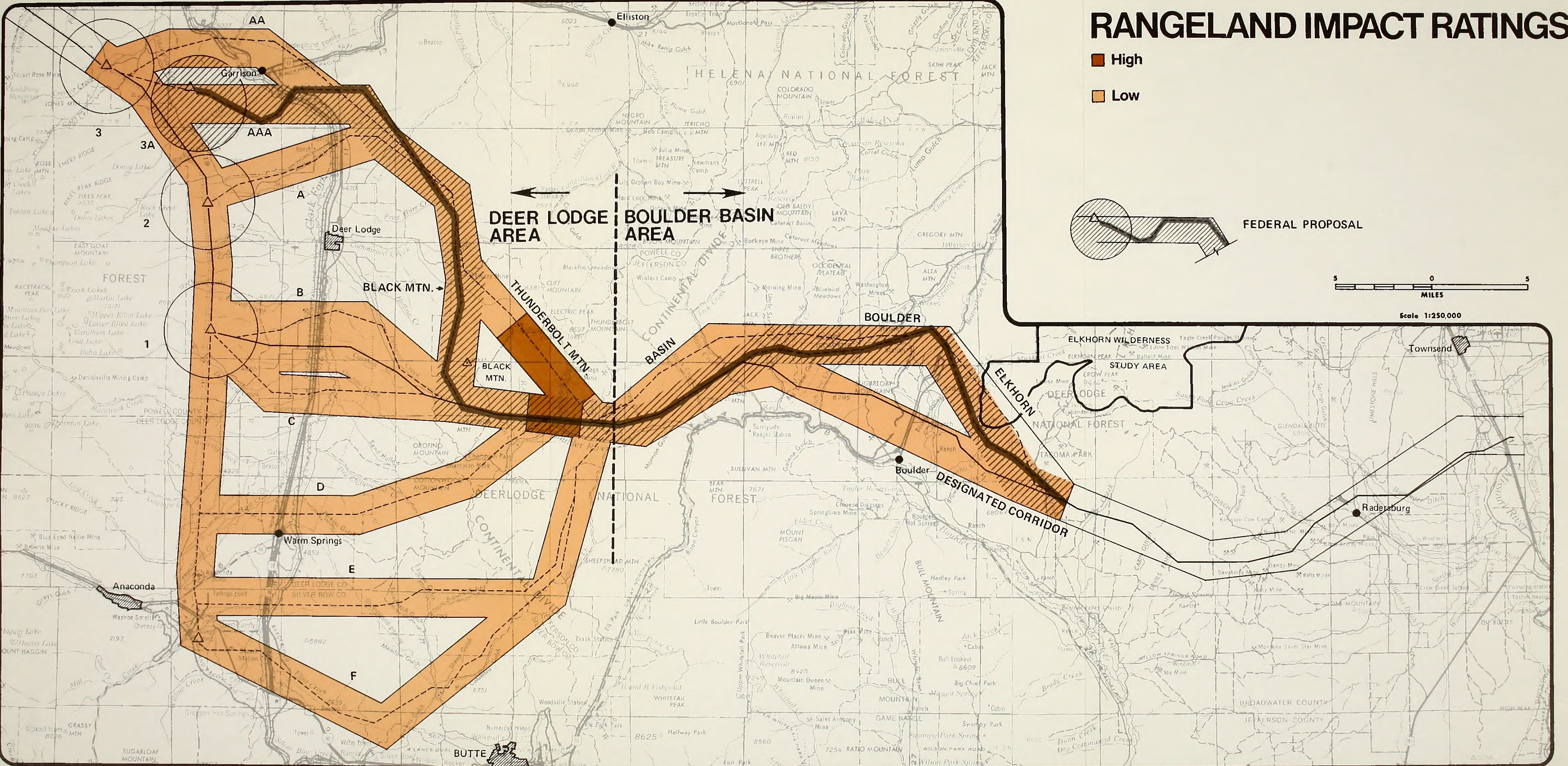
Low



FEDERAL PROPOSAL

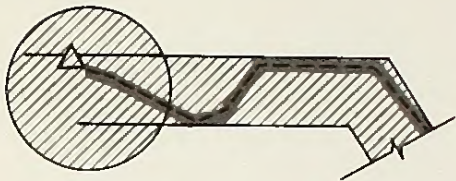


Scale 1:250,000



HUMAN POPULATION IMPACT RATINGS

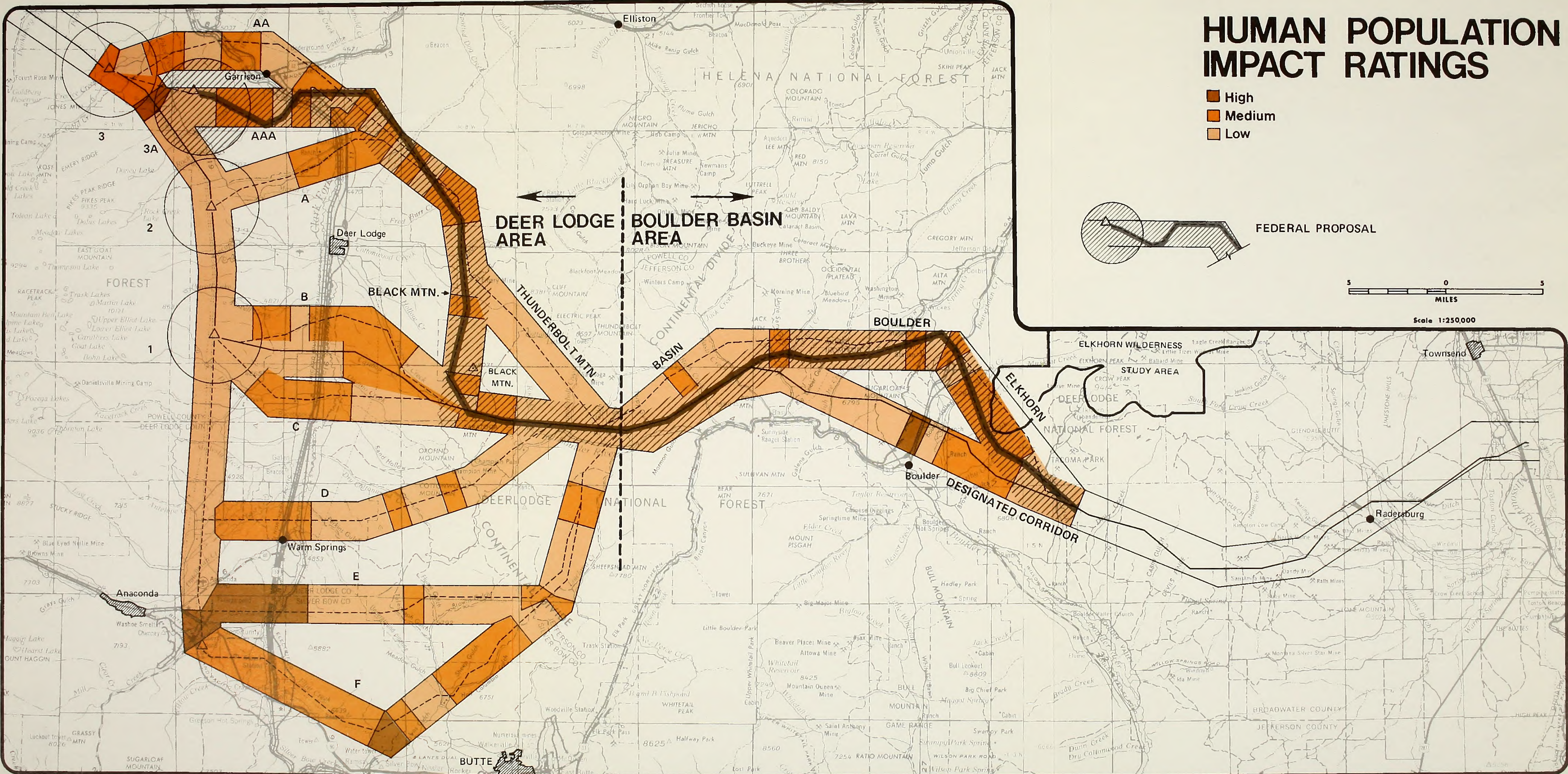
- High
- Medium
- Low



FEDERAL PROPOSAL

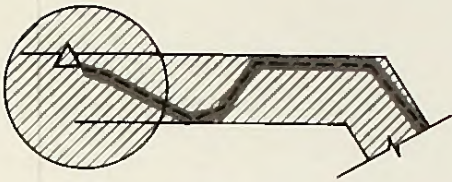


Scale 1:250,000



COMMERCIAL FOREST LAND IMPACT RATINGS

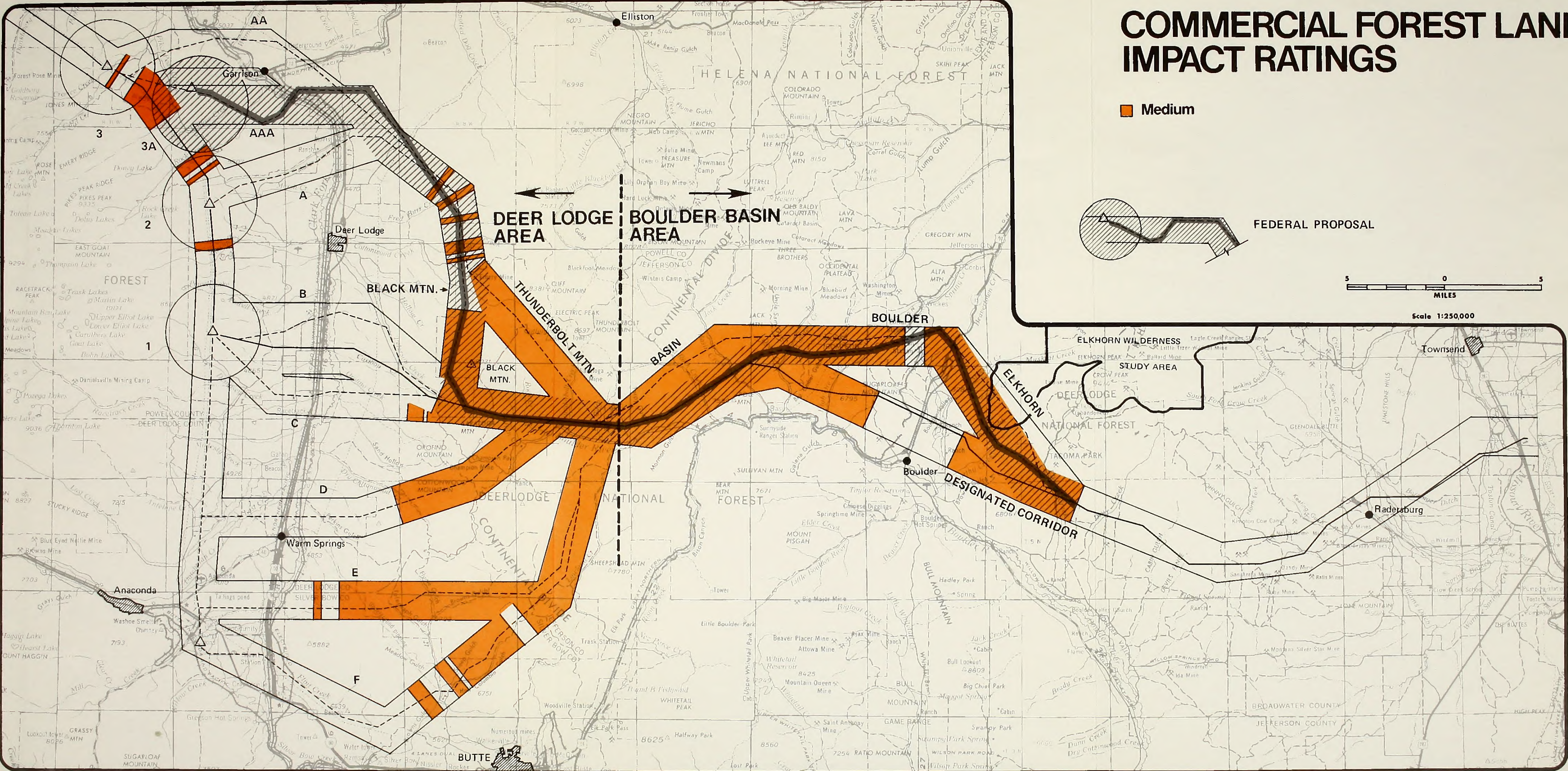
Medium



FEDERAL PROPOSAL

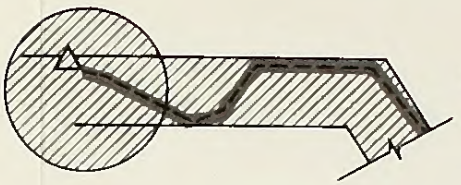


Scale 1:250,000



UNIQUE NATURAL RESOURCES IMPACT RATINGS

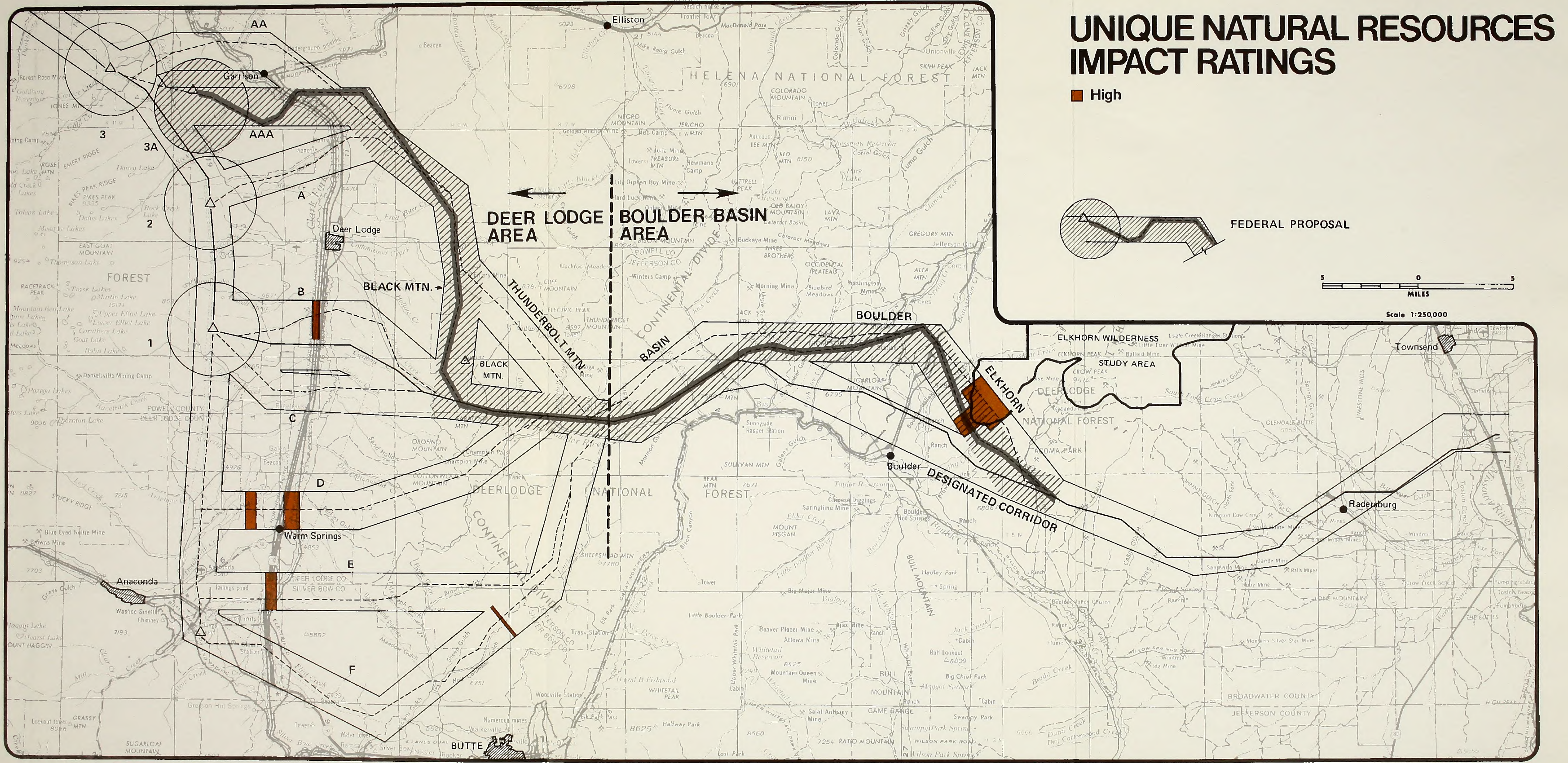
■ High



FEDERAL PROPOSAL



Scale 1:250,000



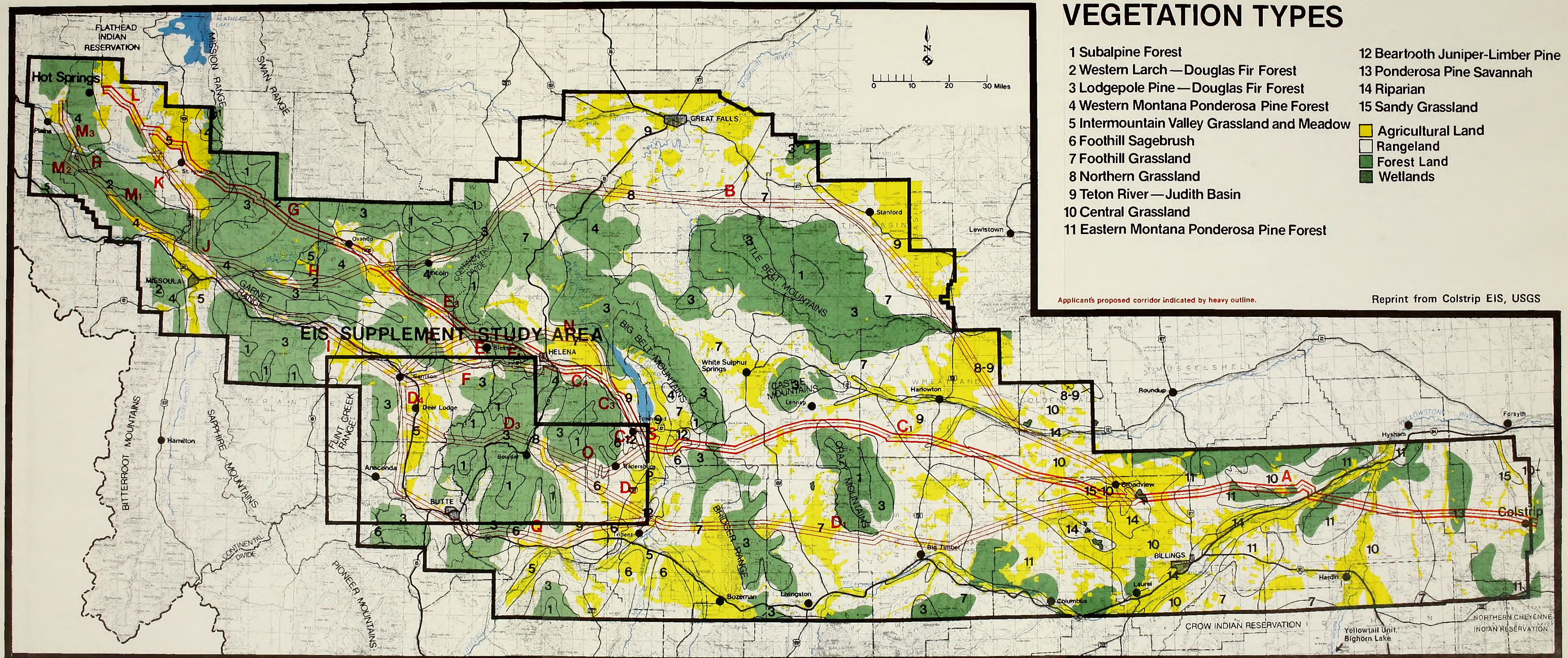


Figure 3.1-6. Vegetation Types in the Transmission Study Area

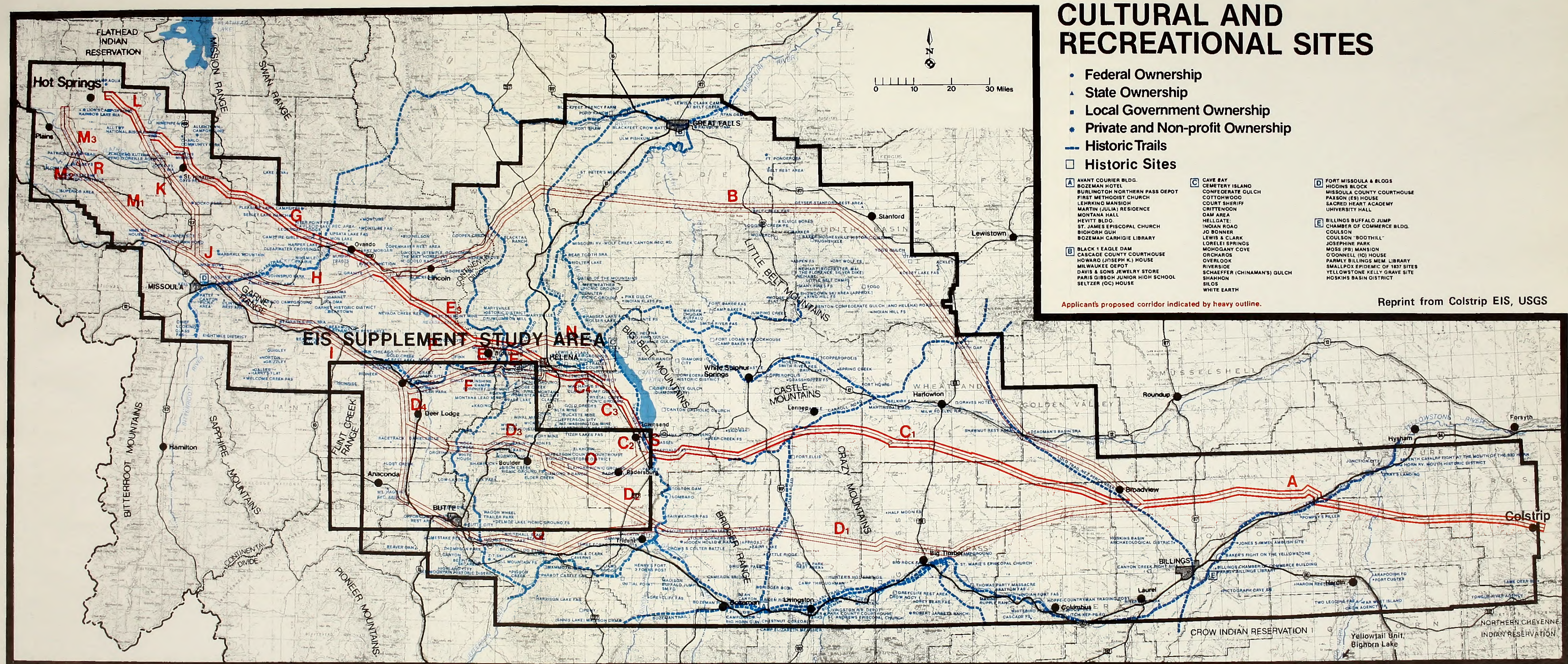


Figure 3.1-7. Cultural and Recreational Sites in the Transmission Study Area

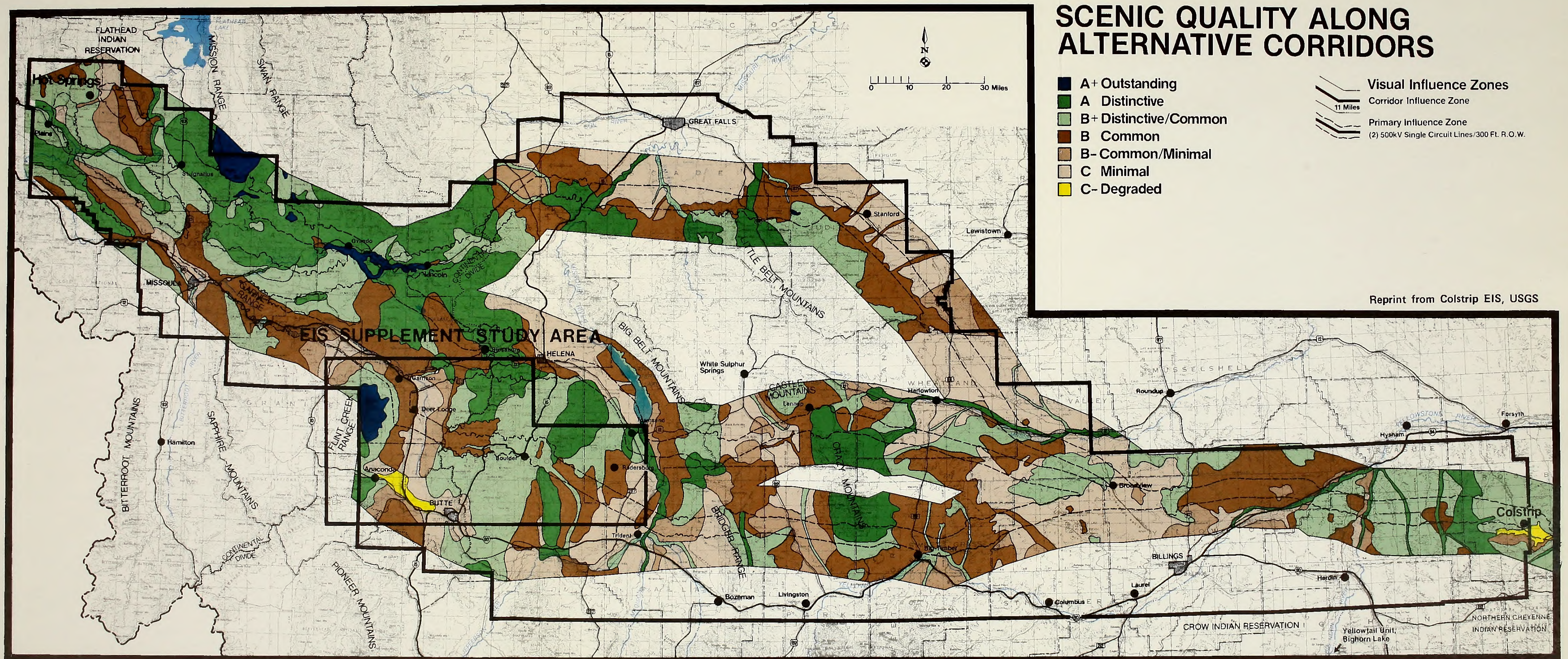


Figure 3.1-8. Scenic Quality Along Alternative Transmission Corridors

POTENTIAL RECREATION SITES AND AREAS

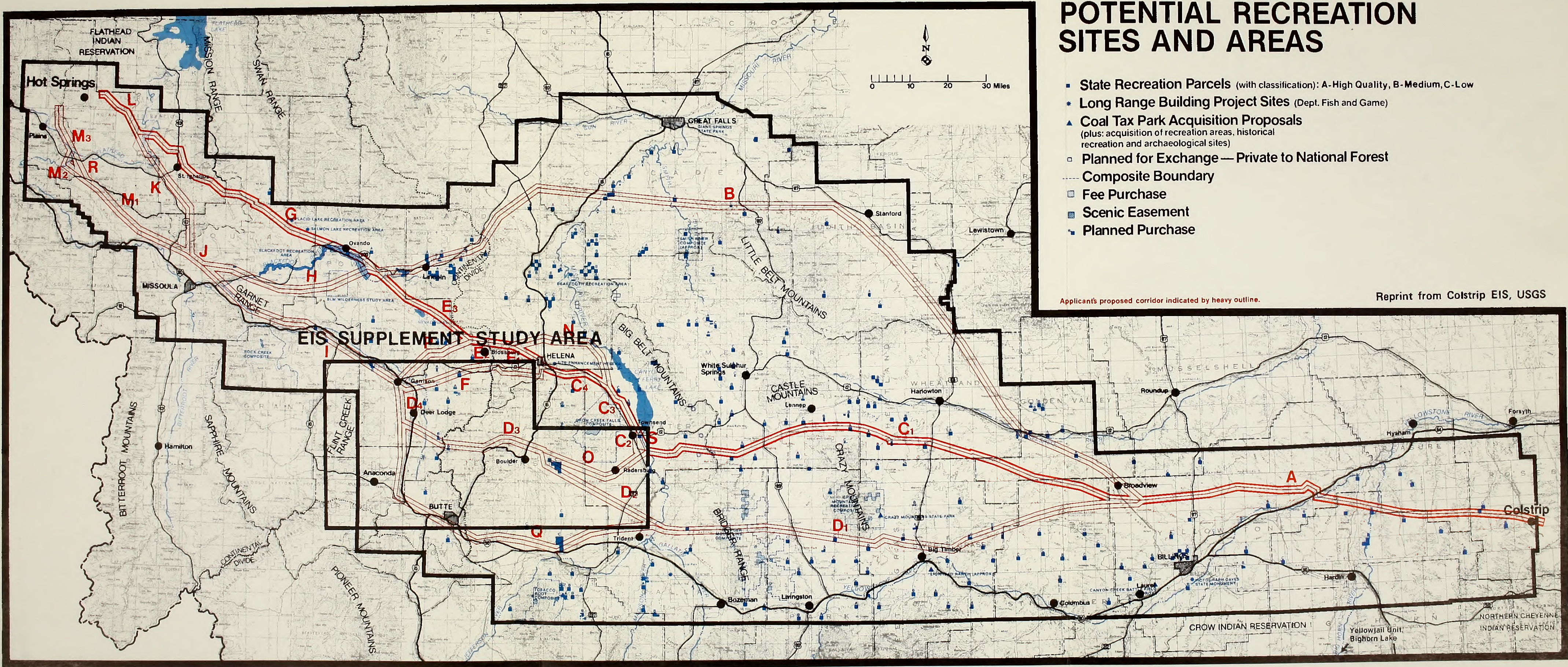


Figure 3.1-11. Potential Recreation Sites and Areas in the Transmission Study Area

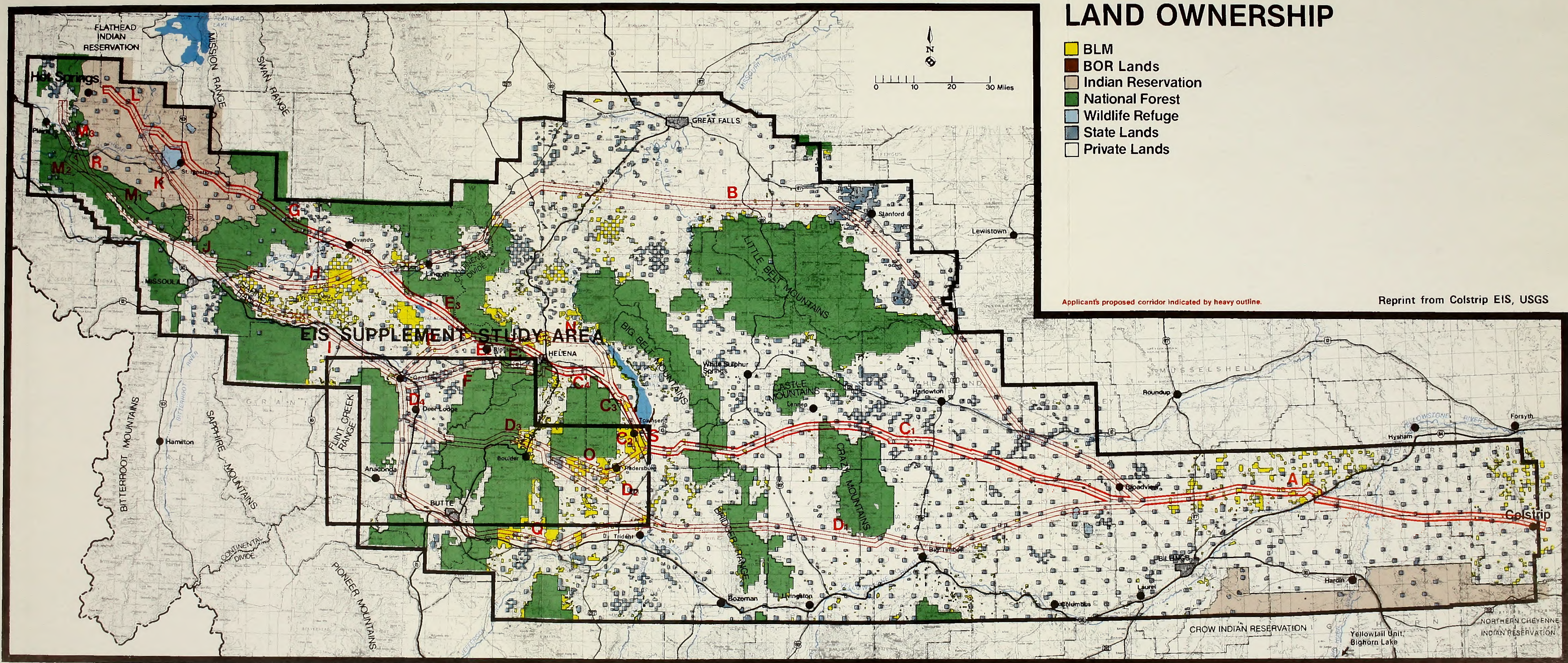


Figure 3.1-12. Land Ownership in the Transmission Study Area

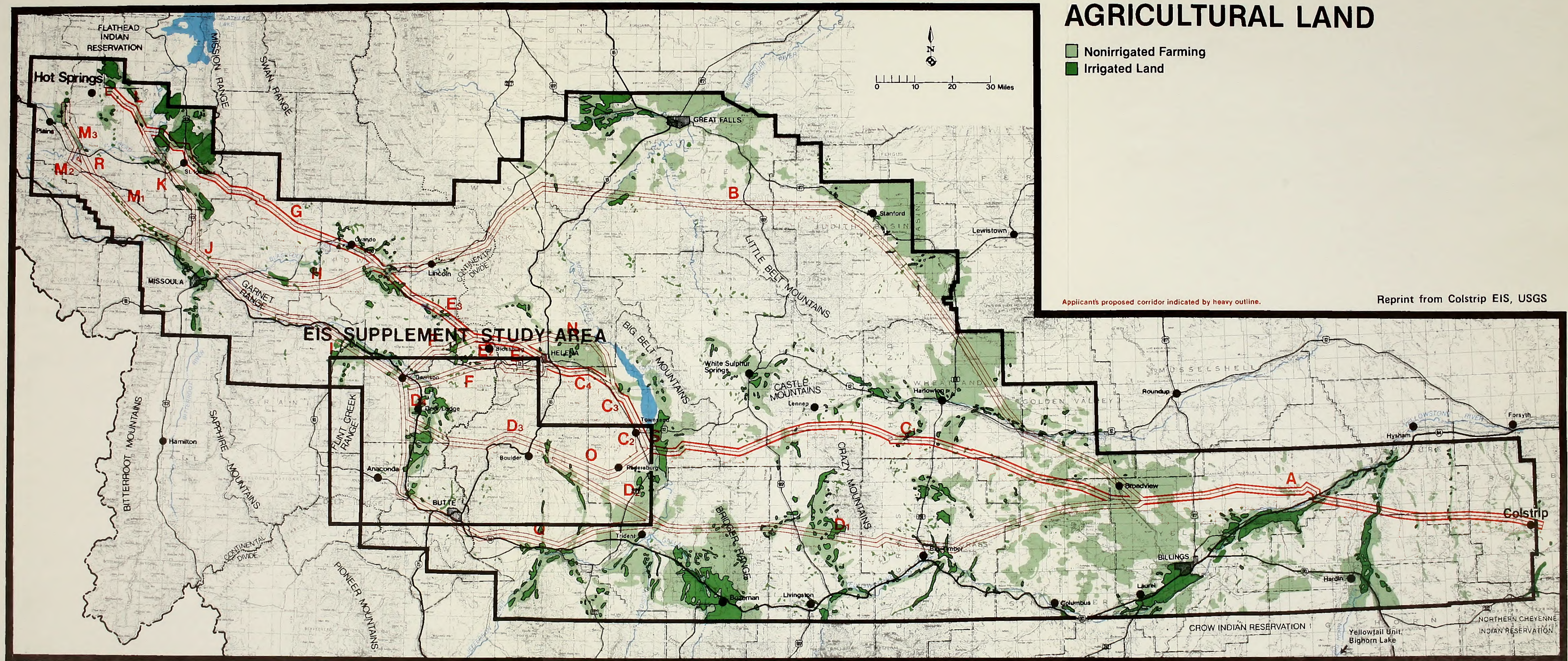


Figure 3.1-13. Agricultural Lands in the Transmission Study Area

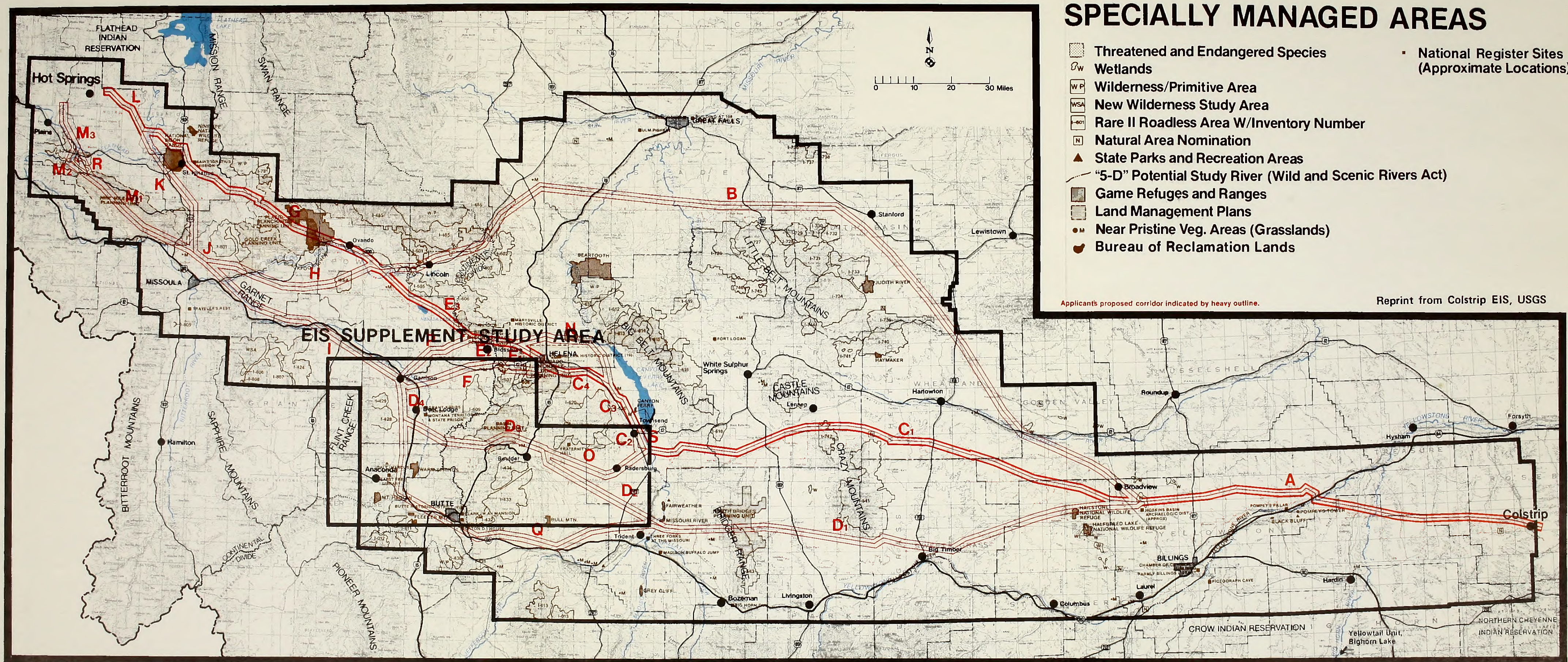


Figure 3.1-14. Specially Managed Areas in the Transmission Study Area

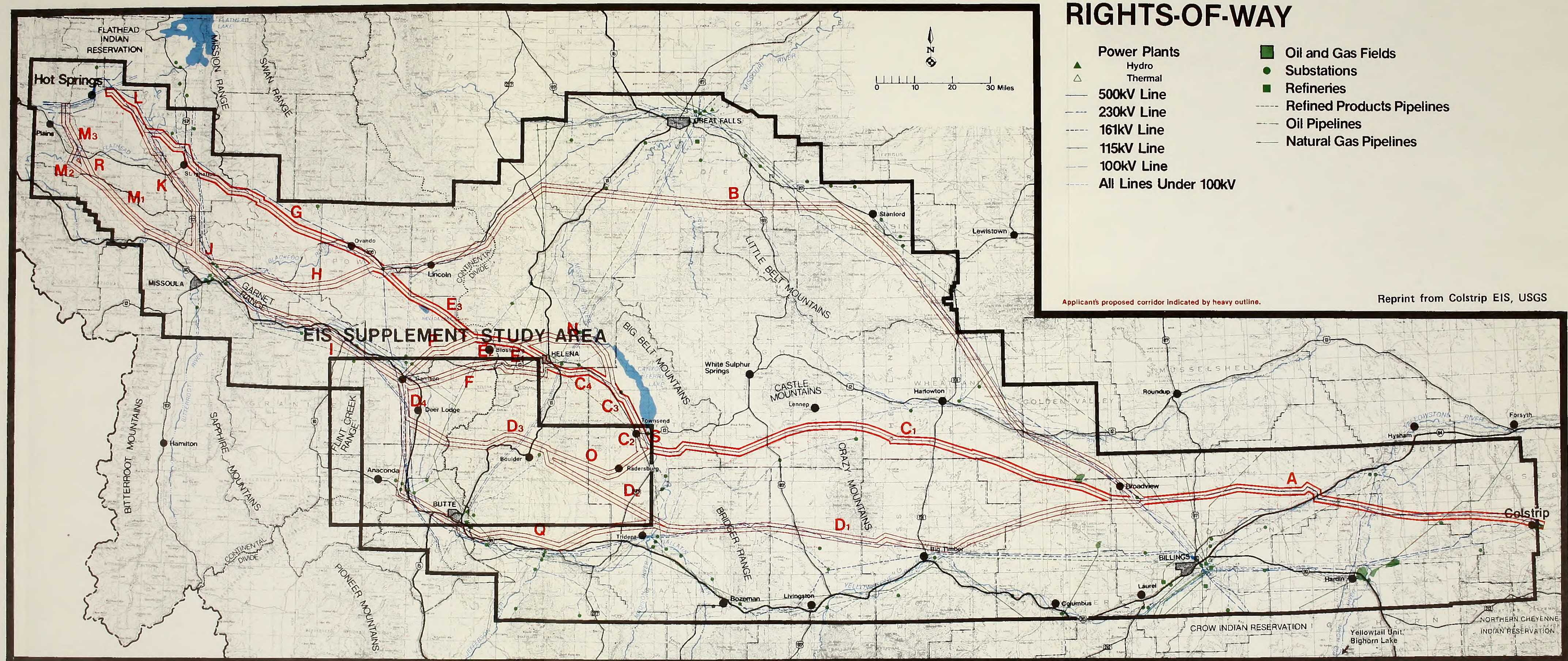
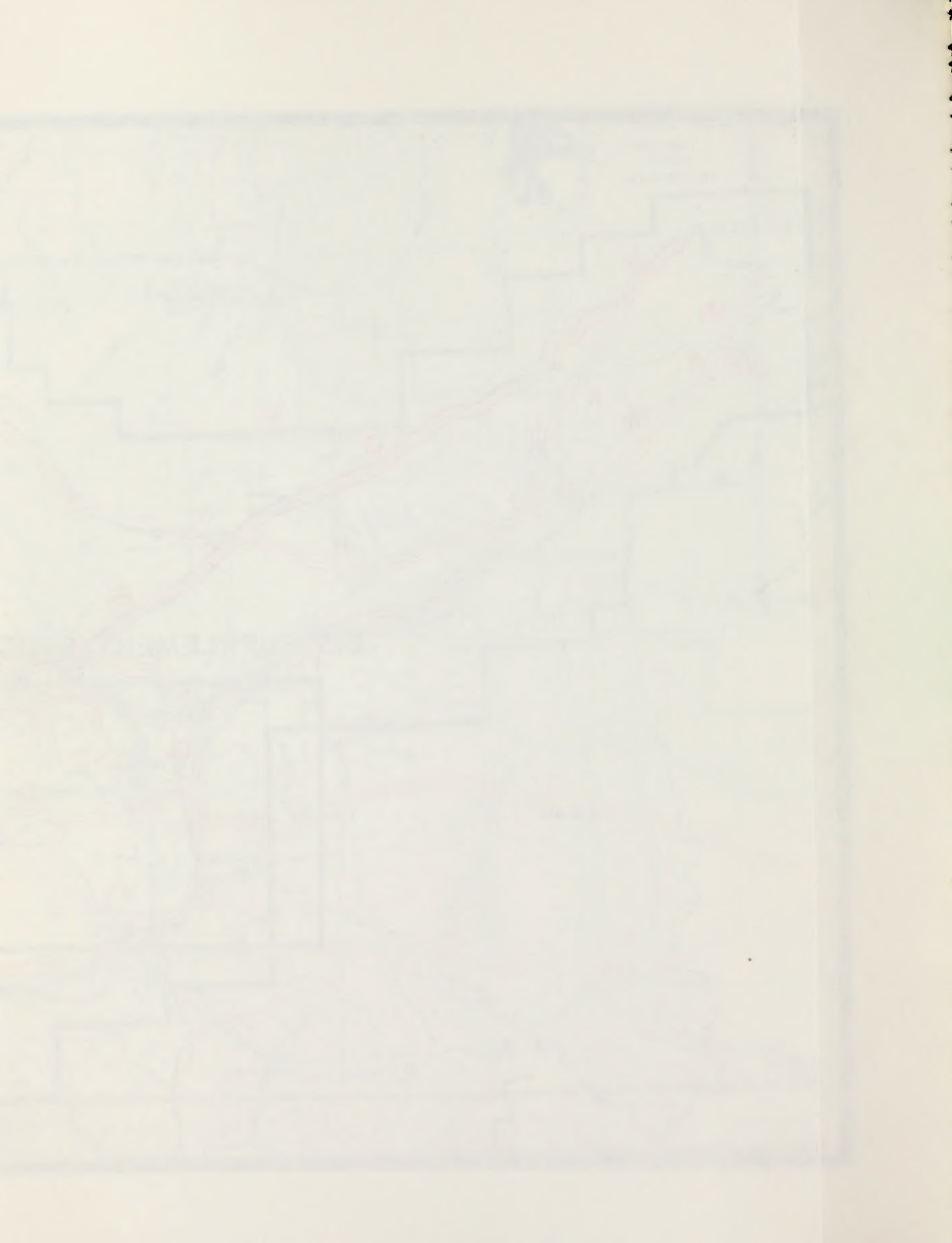


Figure 3.1-15. Existing Rights-of-Way in the Transmission Study Area



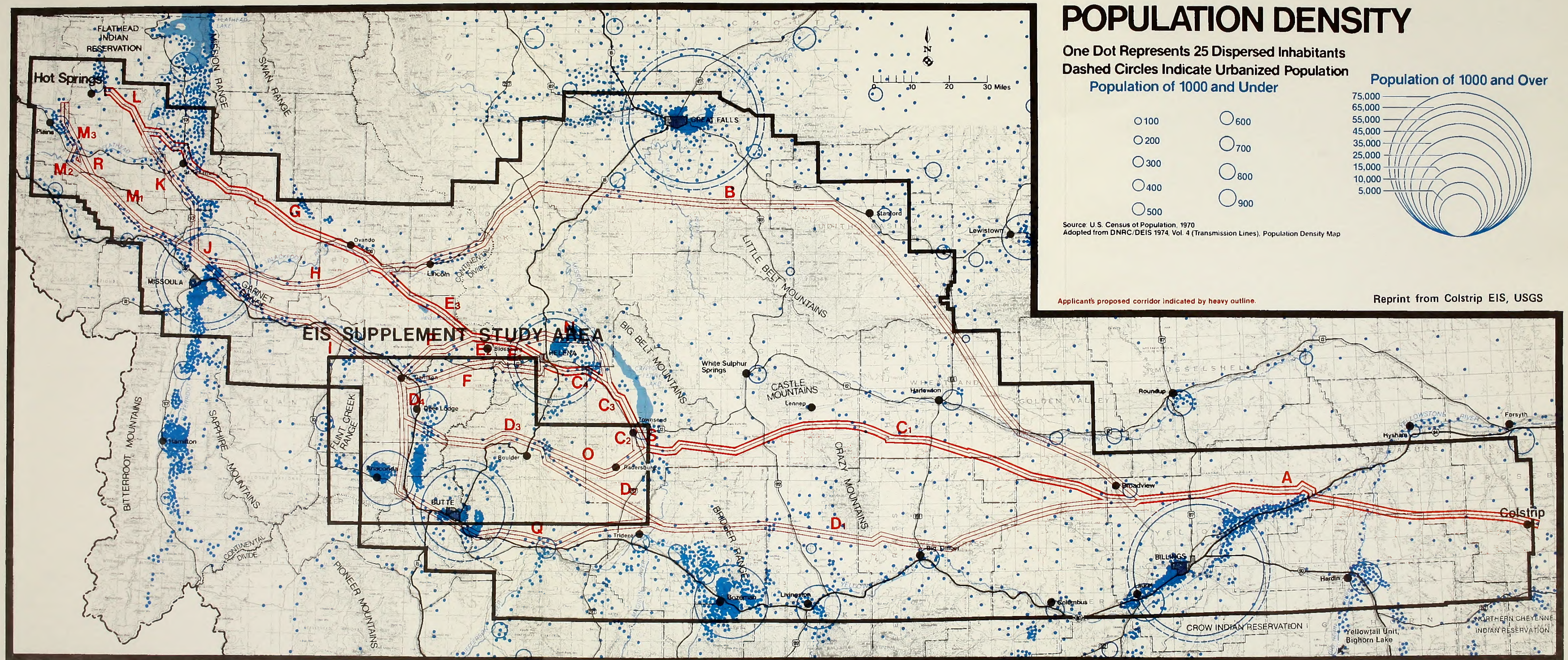


Figure 3.1-16. Population Density in the Transmission Study Area

A P P E N D I X F

NUMERICAL ANALYSIS METHODOLOGY FOR TABLES 1 AND 4

Transmission corridors were developed and analyzed comparatively to measure impacts on the study area's existing environment. A procedure was developed to convert this environmental information into number values. These numbers are used to compare estimated potential impacts on resources crossed.

Each major environmental resource which had a reasonable chance of being affected was referred to as a determinant. Each determinant was considered to be composed of various lesser (or more specific) resources termed data items. Certain data item components of some determinants were also used as determinants. This resulted from considering different aspects of the particular resource in different ways. For example, Agricultural Land is a data item for the determinant Vegetative Cover because it presents a specific portion of this vegetation resource. Furthermore, Agricultural Land is a major resource of the study area which is subject to impacts, so it also warrants full consideration as a determinant. The matrix illustrates the breakdown of determinants and data items. Details on the significance of numbers and letters on this matrix are explained below.

The assignment of numbers to resources, combined with a distance measurement across the resource, provide a basis for developing comparative estimates of the severity of impact for each alternative. For this approach to be used, the geographic distribution within the study area of each resource of importance must be known. Hence, only "mappable" resources can be utilized. Mapping such resource data and information will show locations, distributions, and concentrations of resources, and thus provide indications of "sensitive areas." In this sense, "sensitivity" includes: (1) locations of "critical" resources likely to be severely affected; and (2) locations of environmental areas within which a number of resources share the same space. Having more than one resource which may be affected in a given location increases the potential for environmental degradation. Thus, increased sensitivity indicates increased probability that a high impact would occur in that area if transmission facilities are introduced.

Number values which relate to the sensitivity of resources were derived by placing each data item into a low, medium or high category, based on an estimate of the seriousness of the impact likely to occur on each data item. Each successively higher category was considered to be approximately twice the impact of the lesser category. Numbers 1, 2, and 4 were assigned to the low, medium and high categories, respectively. Thus, high (4) would have twice the impact potential of medium (2) and medium twice the impact potential of low (1).

The determinant "Vegetative Cover" illustrates this. Vegetation is a known mappable resource highly likely to be affected by introduction of transmission facilities. Comprising this determinant are the data items Agricultural Land, Rangeland, Forest Land, Threatened and Endangered Plant Species, and Wetlands. The Agricultural Land component of Vegetative Cover represents an already disturbed vegetation situation. It is a highly managed vegetation system where vegetative recovery would represent a minimum problem. Therefore, impacts on agricultural vegetative cover would not be very serious. Thus it has a 1, or low rating. The natural condition of Rangeland vegetation is more sensitive to disruption and has related recoverability problems; its rating is 2, or medium. Forest Land vegetation would be completely changed in almost the entire right-of-way for as long as the corridor would be maintained in service, so its sensitivity or seriousness rating is 4, or high. Likewise, any Threatened or Endangered Plant Species or Wetlands vegetation would be seriously affected if disrupted by activities related to a power transmission corridor, so they are rated 4. Thus each L, M, or H (low, medium, or high) symbol in the matrix refers to the relative seriousness of an impact on each of these data items. To calculate impact scores, use 1, 2, or 4 to represent this seriousness rating.

The first step in converting the mapped resource information to impact scores was to overlay a corridor map over each data item map. The length, in miles, that each corridor segment coincided with or crossed mapped data items was recorded. Each level of sensitivity--low, medium, and high--was measured separately, and results were multiplied by its corresponding number 1, 2, or 4. The sum of these values for each data item represents the data item impact score for the corridor being measured.

Using distance measurements (miles) as a basis for impact estimates has the advantage of relating impacts to corridor lengths. This helps to account for the greater potential impacts on longer segments, thus favoring shorter corridors if there is a difference in sensitivity between segments. However, only those determinants which are continuous over all land areas, such as Land Suitability or Visual Sensitivity, exhibit this advantage.

Some determinants represent a single identifiable resource, whereas others, such as Wildlife, are composed of a variety of resources. Due to the variety of resources included in this analysis, much variation in the development process was required.

An additional advantage of estimating impacts in relation to distance is that the impact score per mile of segment can be calculated. The magnitude of this value indicates the suitability of various areas within the study area for electric transmission facilities. In certain

instances, longer corridors may be preferred if they avoid areas crossed by shorter segments which may have particularly high impact scores per mile.

One additional quantitative adjustment was required to make this procedure workable. A weighting of determinants was necessary to account for the relative importance of different resources. This adjustment was made by assigning a weight of 1, 2, or 3 to each determinant and multiplying the data item impact score for each determinant by its appropriate weight (see matrix). Thus, the sensitivity of a resource to potential impacts, plus the importance of that resource are accounted for in the analysis.

Derivation of impact scores may be expressed as follows:

$$\left[\frac{\text{Mi of High}}{\text{Data Items}} \times 4 \right] + \left[\frac{\text{Mi of Medium}}{\text{Data Items}} \times 2 \right] + \left[\frac{\text{Mi of Low}}{\text{Data Items}} \right] = \text{Data Item Impact Score}$$

and:

$$\left[\text{Data Item Impact Score} \right] \times \left[\text{Determinant Weight Factor (1, 2, or 3)} \right] = \text{Determinant Impact Score}$$

or, in general terms:

$$\left[\text{Distance of Impact Effect} \right] \times \left[\text{Seriousness of Impact} \right] \times \left[\text{Importance of Resource} \right] = \text{Resource Impact Score}$$

Finally, the sum of all determinant segment impact scores for any corridor equals the Total Impact Score.

Comparing total impact scores of alternatives which could connect the same two points reveals which one would cause the more serious environmental consequences. Corridors with highest total impact scores cross the least desirable areas for introduction of transmission facilities and should be avoided in favor of corridors with lower impact scores.

For a more detailed discussion of the methodology used refer to the TER Chapter IV.

DETERMINANTS	WEIGHTS	RESOURCE DATA ITEMS												Data Item Weights - H=4, M=2, L=1																			
		LAND SUITABILITY			SURFACE WATER			FISH AND WILDLIFE			VEGETATION			AGRICULTURE			RANGELAND			WETLANDS			RECREATION SUITABILITY			PREHISTORIC AND HISTORIC			VISUAL			POPULATION DENSITY AND PROXIMITY	
FISH AND WILDLIFE	2																																
LAND SUITABILITY	2	L	M	H																													
SURFACE WATER	1				H	M	L																										
VEGETATIVE COVER	2																																
UNIQUE NATURAL RESOURCES	3																																
AGRICULTURAL LAND	2																																
COMMERCIAL FOREST LAND	3																																
RANGELAND	1																																
RECREATION RESOURCES	2																																
LAND MANAGEMENT PLANS	-																																
PREHISTORIC & HISTORIC	2																																
HUMAN POPULATION	2																																
VISUAL RESOURCES	3																																

Figure 3.0-1. Corridor Analysis and Evaluation Matrix



GENERAL OFFICES: 40 EAST BROADWAY, BUTTE, MONTANA 59701 • TELEPHONE 406/723-5421

JOSEPH A. McELWAIN

CHAIRMAN OF THE BOARD
AND
CHIEF EXECUTIVE OFFICER

January 20, 1981

Mr. Marvin Klinger
Assistant Administrator
for Engineering and Construction
Bonneville Power Administration
P. O. Box 3621
Portland, OR 97208

Dear Mr. Klinger:

Construction of Colstrip Unit No. 3 is presently on schedule to turbine roll during October 1983. This has required scheduled construction overtime on earthwork, caisson installation and building steel erection operations. We expect Unit No. 3 to be completed on schedule. Measures taken to date to make this possible include slippage of Unit No. 4 schedule and premium payment for accelerating fabrication of scrubber vessels. Additional steps to maintain the schedule of Unit No. 3 will be taken if and when necessary.

Availability of power from Colstrip Unit No. 3 to meet projected demands during the winter of 1983-84 is extremely important to the Owners of the project. Availability of this power is dependent upon BPA completing the Townsend-Garrison 500 kV line by October 1983. Purchase of replacement power due to delay in completing this line would cost approximately \$29 million per month if replacement power was available.

Further, the Owners will have invested approximately \$1.3 billion in Unit No. 3, common facilities with Unit No. 4 and 500 kV transmission facilities. We estimate that the loss of return on the \$1.3 billion investment in late 1983 would be in the order of \$11 to 12.5 million per month if that investment could not be put to use in serving our consumers because of delay in completing the Townsend-Garrison line.

Montana Power has reviewed BPA's December 12, 1980 schedule for completion of the Townsend-Garrison line by October 1, 1983. There are obviously several critical schedule components that include obtaining a Federal decision by June 1, 1981 on modification of the line route. BPA is urged to take all reasonable actions to keep each of the components of its Townsend-Garrison project on schedule.

Very truly yours,

JAM:bw

cc. R. J. Labrie
D. T. Berube
D. E. Olson

June 3, 1981

Mr. Marvin Klinger
Assistant Administrator
for Engineering and Construction
Bonneville Power Administration
P. O. Box 3621
Portland, OR 97208

Dear Mr. Klinger:

This letter is in response to the Administration's request for a current status report of the need for the Townsend-Garrison 500-kV Transmission Line and Substation facilities

Montana Power Company and the other participants in the Colstrip 3 and 4 Project do not have sufficient resources to meet the projected load demand on their systems in the 1983-84 and 1984-85 years without relying on the Colstrip Project. This is true even after the load forecasts recently have been adjusted downward to reflect the impact of the 1980 recession. Colstrip Unit No. 3 is scheduled to be available for commercial service in January 1984, with testing to be done in the prior three months.

If the 500-kV lines from Colstrip to Townsend to Garrison and the Garrison Substation are not completed by the fall of 1983 as presently scheduled, it would not be feasible to place Colstrip Unit No. 3 in commercial operation. However, with the interconnection of the proposed 500-kV lines at Garrison, substantially all of the plant capacity for Colstrip Unit No. 3 can be utilized. Likewise, until the 500-kV lines from Garrison to all other points west are completed, it will be impossible to run Colstrip Unit No. 4 in a safe and reliable manner. In addition, the construction of the double 500-kV line west of Garrison will markedly improve the reliability of the entire system.

Delay beyond October 1983 in establishing the Garrison interconnection will require the purchase of replacement power which would otherwise be available from Unit No. 3. This replacement power, if it can be found, could cost approximately \$29 million per month. Such replacement power would be oil or natural gas-fired electric generation since no other new base-load generation is available in that time frame. If oil or gas cannot be purchased or if sufficient oil/gas fired generation capacity cannot be found in the west, thus meaning replacement power cannot be made available (and Unit No. 3 cannot be run for lack of transmission facilities) then curtailment of electricity usage by the consumers in Montana and the Northwest would likely become necessary. In such situation, the real cost of such curtailment to those consumers could

LETTER - Marvin Klinger

Page 2

June 3, 1981

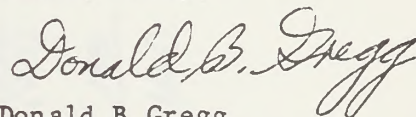
exceed many times over the \$29 million per month cost of replacement power. Such costs would be in the form of lost production, lost jobs, possible damages to industrial processes or equipment, increased health hazards, and many other damages which can occur by curtailment of electrical energy.

Other impacts of delay would be a loss of return to the investors in the project as long as it is sitting idle and could not be put to use in serving our customers. That loss has been estimated to be in the order of \$11 to \$12 million per month for Unit No. 3 and the lines.

In the event the transmission lines are delayed, some expenditures for investment in unused plant capacity could be avoided by readjusting the construction schedule. This could result in a complete shutdown of such construction for an indefinite period. That would put almost 2000 men out of work in Colstrip alone for such period and add substantially to the ultimate cost of the project--a cost which would also have to be borne by the consumers.

I have also included a derived tabulation of the Colstrip Participants' load/resource status both with and without the Colstrip Project for your information.

Yours, truly,



Donald B Gregg
Manager of Resources, Planning
and Contracts

Enclosures

cc. R. J. Labrie
D. T. Berube
D. E. Olson

Major Colstrip 3 & 4 Participants

Energy Load & Resource Projections with & without Colstrip 3 & 4

Energy in Avg. Mw.	Montana Power Co. ¹⁴	Puget Sound Power & Light Co.	Portland General Electric Co.	Washington Water Power Co.	Pacific Power & Light Co. ¹³	Total of Five Participants
1983-84 Operating Yr.						
Load LL	863	1937	1826	1112	2186	7924
Resources ¹²	857	1482	1890	982	2053	7264
Surplus/(Deficiency)	(6)	(455)	64	(130)	(133)	(660)
less Colstrip ³ incl. above	70	52	42	32	21	217
Adjusted Surplus/(Deficiency) w/o Colstrip ³	(76)	(507)	22	(162)	(154)	(877)

1984-85 Operating Yr.

Load LL	903	2005	1889	1135	2276	8208
Resources ¹²	916	1592	1993	1028	2041	7570
Surplus/(Deficiency)	13	(413)	104	(107)	(235)	(638)
less Colstrip ³ & ⁴ incl. above	150	188	151	113	75	677
Adjusted Surplus/(Deficiency) w/o Colstrip ³ & ⁴	(137)	(601)	(47)	(220)	(310)	(1315)

¹¹ From 1981 preliminary "Bluebook" data — unpublished — subject to final revision.

¹² From 1980 "Bluebook" — 9/2/80

¹³ West Group portion of system

¹⁴ From MPCo. load/resource projections — Feb. 1981

D.B.G. — 5/21/81

June 3, 1981

Bozemanville Power Administration
Transmission Coordination Office
1620 Regent
Box 4327
Missoula, Montana 59806

RE: GOLD CREEK SUBSTATION SITE 3A

In consideration of the new proposed 3A Substation Site and the Alternate Southern Route presented at the public meeting June 2, 1981 at the Gold Creek Community Hall by BPAs and without disregarding any of the previously submitted considerations addressed in our March 24, 1981 comments, the members of the Gold Creek Community feel that the 3A Substation Site, if the Southern Route is the final exit route, would be the least unacceptable proposal presented by BPA.

As a further condition to our above statement, we again voice our concern for the specific items not satisfied at the meeting of June 2, 1981.

1. Roads through the community present several potential problems, including the one lane light load limit bridges; dust arising from the increased traffic, and the application of dust suppressing oil; speeding and related traffic control particularly in the vicinity of the school and residences, and control of access to the construction site and right of way.
2. Interference from the construction and transmission of the BPA facilities as it will relate to radio, television, and telephone transmission reception.
3. Impact on the normal operation of the school in District 33 because of fluctuating enrollment resulting from the construction of the transmission facilities.
4. Fair compensation to the land owners affected for their property destruction and responsible actions and solutions to unanticipated problems by BPA.

Attachments:

1. Testimony given at March 24, 1981 hearing in Deer Lodge, Montana
2. Signature page



IN REPLY REFER TO
7619 (RMR)PC

United States Department of the Interior

NATIONAL PARK SERVICE
ROCKY MOUNTAIN REGIONAL OFFICE
855 Parfet Street
P.O. Box 25287
Denver, Colorado 80225

MAR 13 1981

Colstrip Supplement

INITIAL	DATE IN	DATE OUT
YND		
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TS		
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ACTION		
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FILED 11-45329

Memorandum

To: State Director, Bureau of Land Management, Billings, Montana

Attention: Mr. Neil Morck

From: Associate Regional Director, Planning and Resource Preservation, Rocky Mountain Region

Subject: Draft Supplement to the Final Colstrip Project Environmental Impact Statement

The National Park Service has reviewed the subject document. The preferred alternative of the Black Mountain + AAA corridor would route the Colstrip powerline around the Deer Lodge area with the least visual impact on the Grant-Kohrs Ranch National Historic Site.

As page 3-11 of the document points out however, if the Thunderbolt Mountain + A corridor were to be chosen it would come closest to the National Historic Site and have the greatest visual impact on the site. The National Park Service would oppose selection of this corridor.

We appreciate the opportunity to comment on the document.

Richard A. Strait
Richard A. Strait



MONTANA HISTORICAL SOCIETY

HISTORIC PRESERVATION OFFICE

225 NORTH ROBERTS STREET • (406) 449-4584 • HELENA, MONTANA 59601

March 10, 1981

Michael J. Penfold
State Director
U.S.O.I. B.L.M.
222 North 32nd Street
P.O. Box 30157
Billings, MT 59107

Re: Colstrip Project EIS;
Draft Supplement

Dear Mr. Penfold:

Thank you for the opportunity to review the above-named document. At your convenience my staff and I will be happy to review the archaeological and historical reports from which the information on cultural properties was digested.

Sincerely,

Marcella Sherfy
Marcella Sherfy
Deputy SHPO

MS:ch



Continental Divide Trail Society

P.O. BOX 130002 • DENVER

WASHINGTON D.C. 20014

March 16, 1981

Mr. Neil Morck
Bureau of Land Management
222 N. 32nd Street
P.O. Box 30157
Billings, Montana 59107

Dear Mr. Morck:

We have reviewed the draft supplement to the final environmental impact statement for the Colstrip Project.

We believe impacts upon the Continental Divide National Scenic Trail should be given considerable emphasis. The EIS does mention these impacts, however, and we do not disagree with the conclusions you reached. A definite route for the Trail has not as yet been selected. It might ultimately be located east of the Divide, passing through Basin and Whitetail Park. Even so, the designated route as described in the draft supplement would not result in unacceptable impacts.

It would be appreciated if you would place us on your mailing list of organizations to be contacted regarding other activities in the vicinity of the Continental Divide.

Thank you.

Sincerely yours,

James R. Wolf
James R. Wolf
Director

Year of
the Visitor

DEPT OF INTERIOR
BUREAU OF LAND MANAGEMENT

1981 MAR 24 11 2 00

Carmine Mowbray
P.O. Box 307
Deer Lodge, Montana 59722

MONTANA DIVISION
BUREAU OF LAND MANAGEMENT

March 23, 1981

Regarding the Proposed BPA Power Line Routes in the Deer Lodge Area:

I am opposed to the proposed BPA powerline routes for two reasons. First, its tremendous visual impact, regardless of which route is chosen. Let me point out that within our housing subdivision, Wildflower Hills on Beck Hill, it was mandatory that all our power and telephone lines be buried for aesthetic reasons. Now this powerline with its 162-foot tall towers will be visible from these homes if Routes A or AAA are used.

The second reason is that the line will be a hazard to aviation. Montana has the second highest concentration of pilots and aircraft per capita of the states and the Deer Lodge Valley is a main corridor of air traffic through the state. Occasionally pilots are forced to fly low through the valley in certain weather conditions.

Our National Guard flies to Deer Lodge from Helena every month and practices maneuvers in the area, crossing the proposed routes frequently.

Because the cost of constructing this line will be ultimately passed on to the power consumers, I feel that the BPA could, without excess concern for the cost, establish a route through the Deer Lodge Area among the tree line, outside the visual realm of the residents, and more along the foothills, where there would be less hazard to aircraft and our National Guard.

Thank you for your consideration.

Carmine Mowbray
Carmine Mowbray

1	213	3/24
SEARCHED		
INDEXED		
SERIALIZED		
FILED		
MAR 24 1981		
FBI - BUTTE		
ACTION		
FILING		



Cooperative Extension Service

MONTANA STATE UNIVERSITY, BOZEMAN, U.S. DEPARTMENT OF AGRICULTURE AND MONTANA COUNTIES COOPERATING

DEER LODGE POWELL COUNTIES
DEER LODGE, MONTANA 59722
TEL. 592-1000

Mr. Neil Morck
U.S. Department of the Interior
Bureau of Land Management
PO Box 30157
Billings, Montana 59107

Dear Mr. Morck:

I am very concerned about the route of the proposed BPA power line through the Deer Lodge Valley. The Deer Lodge Valley is not a large valley. The best agricultural ground is situated in the center of the valley.

I would recommend that the powerline be routed through the foothills surrounding the valley. Our valley in the past has had some difficulty with routing of federal projects in the past. Interstate 90 cuts right through the center of the Deer Lodge Valley, taking a considerable amount of agricultural land out of production. We do not want this to happen again.

Sincerely,

David J. Screufert
David J. Screufert
County Extension Agent
Deer Lodge and Powell Counties

DJS:kr

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION
REGION EIGHT

Montana Division
Federal Office Building
301 S. Park, Drawer 10056
Helena, Montana 59626

March 17, 1981

HPD-MT 01111a

Mr. Neil Morck
United States Department of Interior
Bureau of Land Management
222 North 32nd Street
P.O. Box 30157
Billings, Montana 59107

Dear Mr. Morck:

Subject: Colstrip Project EIS, Draft Supplement

We have reviewed the Draft Supplement on the Townsend-Garrison portion of the Colstrip 500-kV transmission line. We have the following comments to make concerning transmission line crossings of public highways:

We suggest that measures be taken to protect the travelling public. During the time of transmission line construction all construction zone signing should conform to the requirements of the Manual on Uniform Traffic Control Devices and the permanent installation should be located in a manner to provide satisfactory vertical and lateral clearances to reduce hazard to over-height vehicles or to off-the-road type accidents.

Sincerely yours,

W.S. Dumbor
Volmer K. Jensen
Division Administrator



DEPARTMENT OF HEALTH & HUMAN SERVICES

Office of the
Principal Regional Official

APR 10 1981 April 7, 1981

MONTANA DIVISION
BILLINGS, MONTANA

Mr. Michael J. Penfold
State Director
Bureau of Land Management
U.S. Dept. of the Interior
222 North 32nd Street
Post Office Box 30157
Billings, Montana 59107

Dear Mr. Penfold:

We have reviewed the Draft Supplement to the Final Colstrip Project EIS regarding the additional transmission line corridors from Boulder, Montana to Bonneville Power Administration, Boulder, Montana.

We share the concern for the possibility of electrical and biological effects described in Appendix C of the Supplement. However, current "state of the art" research would indicate the electrical and magnetic fields do not create serious problems. However, it would seem prudent to discourage future human habitation and extensive human activities in the vicinity of exceptionally large transmission lines.

We would also suggest that the entire EIS proposal be reviewed to insure that emergency medical facilities will be accessible to the workers constructing the transmission line.

Sincerely yours,

E. V. McIntire, R.A.
E. V. McIntire, R.A.
Acting Director, BOPFO

17-45327

DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION

Neil Morck
April 6, 1981
Page 2



STATE OF MONTANA
GOVERNOR
406/249-3712

32 SOUTH ELM
HELENA, MONTANA 59620

April 6, 1981

Neil Morck
Bureau of Land Management
222 N. 32nd Street
P.O. Box 30157
Billings, MT 59107

Dear Mr. Morck:

The Montana Department of Natural Resources and Conservation (DNRC) would like to take this opportunity to comment on the Draft Supplement to the Colstrip Project EIS released in February 1981.

On February 11, 1981, the Bonneville Power Administration (BPA) office in Portland was informed of the Department's comments on an earlier draft of this document. Many of those comments have been addressed in the present document. However, some of them have not. Those comments not addressed are repeated for BPA review and analysis.

General comments raised previously which DNRC would like BPA to respond to are as follow:

1. The advantages and disadvantages of paralleling existing linear facilities should be discussed if this has any bearing on the final route decision. If paralleling is considered to have no effect on the decision this should be stated.
2. If there are cultural resource surveys being undertaken on the centerline survey, they should be described. Specific comments submitted previously which should be addressed are:
 - a. Page 1-4, #5; Page 2-3, Economic; and Page 3-6, Economic-- These statements imply that there is no way that local communities can get tax relief (impact aid) from BPA for loss of revenues because BPA and not a private utility is building the line. This is not true. While the mechanism may not presently be in place, the Pacific Northwest Power Planning and Conservation Act passed in December 1980 allows the BPA Administrator to make payments to local governments as impact aid. If the BPA Administrator has determined that he will not authorize aid in this particular case, justification for that denial should be presented.

- b. Page 2-4, 2-6, 2-7, 2-8, 2-9, 2-11, 3-7, 3-10, 3-11, 3-16, 3-18, 3-19, 3-21, 3-23, 3-24, 3-25, 3-26 and 3-28. On these pages, forest impacts are rated high or moderate depending upon whether the impacts are evaluated under plants or land use. The high impact rating is inappropriate since impact risk of losing forest cover in such a vast forested area is not significant, except possibly in some very localized (site specific) area.
- c. Tables 1 and 4. These tables are unclear. Route comparisons done in this fashion are of little meaning in the context of an EIS. Comparing or rating the routes by relative value in resource areas could be presented in tabular form and would be much more meaningful to the public.

The following comments have not been submitted previously by the Department, but should be addressed in the final supplement.

1. Under issues identified during scoping, the following are listed but not addressed in the Draft Supplement:
 - a. Compensation to the landowner,
 - b. cost to taxpayers, and
 - c. construction and mitigation practices.
2. Table 3--Designated Corridor #6. The name of the group is the North Boulder Protective Association (not as shown in Table 3).
3. Page 1. The double circuit 500 kV line is being built for Units 3 and 4. Energization for commercial purposes is presently scheduled as January 1984 for Unit 3 and July 1985 for Unit 4. One of the 500 kV lines is needed to carry generation and the other is needed for reliability purposes. These facts should be clearly stated.

Thank you for the opportunity to comment on this Draft.

Sincerely,

Leo Berry, Jr.
LEO BERRY, JR.
DIRECTOR

LB/bw
cc: Randy Moy, FSD, DNRC
Gordon Brandenburger, BPA

AN EQUAL OPPORTUNITY EMPLOYER

-2-

D. In view of some of the other "misinformation" in the EIS, we would definitely question BPA's assertion that there are no adverse electrical and biological effects. It appears to us that there has not been sufficient time and effort given to determining the long term effects on children and ourselves of living in close proximity to high voltage lines. If high voltage lines are as wonderful and safe as BPA would like us to believe, why the necessity of such publications as Tip on How to Behave Near High Voltage Lines.

E. As members of a group that will be definitely impacted by any of the proposed corridors and Substation Site 3, we resent the fact that BPA has had considerable time to propose corridors and sites, but it was only recently that the Gold Creek Community was told they would be directly affected, and that Substation Site 3 was the preferred site. Surely this was on BPA's drawing boards long before the Gold Creek Citizens were informed.

In conclusion, as a community group deeply concerned with the impacts the proposed corridors and Substation Site 3 will have on our community, we restate our unanimous opposition to the Gold Creek Substation and all corridors leading to it, and will remain opposed until the issues raised can be satisfactorily resolved with the least amount of impact to people.

Respectfully,

Gold Creek Homemakers Club
c/o Judy Hogan, President
Box 12
Gold Creek, Montana 59733

Signature page attached

U.S. Department of Interior
Bureau of Land Management
Box 30157
Billings, Montana 59107

Attention: Mr. Neil Morck

The Gold Creek Homemakers Club's ultimate aim, as stated in its constitution, is to work for better living and development of well-informed people equipped to appraise and handle changing problems in family and community life. It brings to the people the findings of science and research in the field of homemaking and community development. People are helped to translate research findings into practical use and to merge with them present homemaking practices and community development. The end objective is always a more satisfying life for the family and a better citizenry.

We as a concerned group are opposed to the proposed Substation Site 3 and all corridors affecting our Gold Creek Community. We would like to offer the following comment on Colstrip Project EIS Draft Supplement:

A. It does not appear to us that the EIS accurately evaluates the impact that the proposed Substation Site 3 and proposed corridors leading to it would have on the community. The population figures and number of residences affected are misrepresented. Also the fact that a substation is dumped in the middle of our valley and no one will indicate how it will leave, places a good deal of the citizens in our community in a very difficult position.

B. The extraordinary amount of input into the EIS concerning the impact on game and other wildlife, while an important factor; we cannot help but wonder why impact people and their lifestyle is not given the same careful consideration.

C. What will the impact on the tax base of our area be? Will the area be compensated for the loss of tax revenues that will ultimately affect schools and county services? Who will foot the bill for upgrading and maintaining roads to the substation and corridor sites?

1981 APR 14 11 08 AM

Robert R. Lewis

Box 302

Neil Morck
RECEIVED
MONTANA STATE OFFICE
BILLINGS, MONTANA
BLM - 223 N. 32nd St.

Boulder, Mt. 57632

4/11/81

Box 30157

Billings, Mt.

Gentlemen:

On September 21, 1979 two federal officials decided on the location of a two-mile wide powerline corridor. This Townsend-Garrison Substation portion of the Colstrip 500 KV line is a far-reaching project affecting many people. Who are these two men to instantly decide on a location??

I am against the current corridor location of this 500 KV line for many reasons, one of which is stated above. Also the EIS is incompetently done and was a waste of our money. Page one of the EIS tells it like it is. This powerline was decided on without the input of the people who it is going to affect. Who are these "beaurabrats" to decide? Do they have degrees in powerline location?

More specifically, I have objections and questions:

- ① - No one has objected to date on the portion of the line that is to pass over the crucial elk winter range from Pole Mtn. to Thunderbolt Cr., known as the Berkin Flats. Is it of no concern that this area supports 300 elk (excluding deer) during the four major months of winter? If anything, the powerline should be moved at least 1 mile north of its present location

② - no future insurance against adverse health effects.

③ - ~~the~~ the adverse socio-economic effects of construction (we've seen what happened at the Colstrip slum).

It's very sad that two men sitting in some no-name office can make a decision that will affect the lives of hundreds of people in the future. It is also very sad (actually stupid) that we have one bankrupt railroad (that could ship coal out of state). I won't give my support to a powerline moving electricity west to Washington when they're going to "tube" oil east to the Minnesota and the Dakota's. Think for a minute; does it make sense??? Or doesn't anything make sense in your "beaurabrat" world?

Very (un) Sincerely Yours,

Robert Lewis

across this area.

I understand that no one knows what biological effects, 500 KV's have on an elk population. But put that aside for a moment. Every double-circuit tower has to have a graded-specified road to it (referring to F.S. land, pg. A-3 Colstrip EIS supplement). This will increase access to an area that needs to be secluded. Plus it will give an excuse to Forest Service timber organizations to harvest in areas previously thought inaccessible. Every wildlife biologist knows what reduced thermal cover does to big game winter ranges. Not to mention the strain put on elk during a hard winter.

In the EIS it is stated that mitigation for wildlife -- in particular, elk -- will be accomplished by Dr. Pictin's suggested study of 1979. Well, a lot of good that does us!! Who the hell is he, what would his study entail, and who is going to implement it?? No doubt, someone paid to keep a low profile.

- ② - You "beaurabrats" have really "pulled-the-wool" over the eyes of Boulder and Deerledge Valley residents. What was said at first indicated there may be a powerline coming through. Now it's printed on the paper of an EIS, worth less than the stumpage of a 40-acre clearcut needed to produce the paper.

Now you say, "make your centerline choice folks!" And Boulder residents stand to lose in the long run from:

- ④ - an aesthetically displeasing valley.
- ⑤ - no taxes from publicly transported electricity.

-3-

MISSOULA COUNTY
OFFICE OF THE ATTORNEY
MISSOULA COUNTY COURTHOUSE
MISSOULA, MONTANA 59801
TELEPHONE (406) 721-5700
ROBERT L. DESCHAMPS III
COUNTY ATTORNEY

April 10, 1981

John O. Hooson
EHA, Bonneville Power
Administration
P.O. Box 3621
Portland, Oregon 97208

Dear Mr. Hooson:

Enclosed please find my comments regarding the draft supplemental EIS for the Boulder-Deer Lodge area.

Sincerely,

Robert L. Deschamps III
Robert L. Deschamps III
Missoula County Attorney

RLD/dc

ISSUES AND CONCERNS NOT SATISFACTORILY ADDRESSED BY THE
DRAFT SUPPLEMENT TO THE COLSTRIP PROJECT FINAL EIS

1. Electrical and Biological Effects.

The discussion in Appendix C, is markedly superficial in comparison to "Considerations in Transmission Line Routing" by the Minnesota Environmental Quality Board. Appendix C consists of only seven pages of text and four pages of tables. Yet it purports to cover all electrical and biological effects.

The discussion in Appendix C is biased. A statement indicative of the basic problem is: "We have concluded there is no valid evidence to indicate transmission line electric or magnetic fields pose a health hazard." p. C-3. This conclusion could be reached only by ignoring the mainstream of thought on the subject.

Words have been carefully chosen to discredit research not in support of the BPA position and to minimize risks and effects. Examples of biased language are: (1) "temporary effects may have questionable biological significance in terms of impaired health." p. C-4. and, (2) "little reason for concern about the possible existence of long term health effects." p. C-3.

There are significant omissions in the discussion. The draft supplement fails to candidly discuss the issue of biological risks. The presentation of information in Appendix C is designed to protect the BPA's position. Appendix C is a justification of a position previously reached, not an impartial evaluation of the data.

the property taxes that would be generated if the line were built by private companies. Unless the payments in lieu of taxes are made, the construction of the line by the BPA becomes a subterfuge of state taxation laws by private utilities.

4. Devaluation of Property

The second aspect of the tax problem is that lands within and adjacent to the right-of-way will be devalued because of the limitations on their use. Such devaluation will result in less taxable value and less revenue to counties. Some of the land will be taken out of use entirely (by towers), some will be very limited in use (within the right-of-way), and some will be limited to certain uses (adjacent to right-of-way). Lands will be taken out of production without compensating revenues.

BPA policy has been to compensate landowners for diminution in value of land only within the right-of-way, not for devaluation of adjacent lands. This policy would be especially harmful where the right-of-way width results in electric and magnetic fields and noise levels that prohibit full use and enjoyment of lands outside the right-of-way. This becomes a taking of private property without due process or just compensation. The property owners and the counties are affected adversely by this policy. The present BPA policy must be revised to provide compensation to adjacent landowners whose property rights are diminished as a result of the transmission line.

5. Preselection of Route

On page iii of the draft supplement, No. 5 states that a preferred corridor will be announced by BPA, BLM, and FS following evaluation of public comment in the Supplement. Yet, accompanying the supplement was a Department of Energy information release dated February 23, 1981, saying "agency managers have reached accord on a tentative preference for routes

2. Future Transmission Lines

The refusal to discuss the proposed line as one in many in the system for east-west transmission is a major shortcoming of the EIS. It is an improper segmentation under NEPA. The high probability of 10 to 20 transmission lines being constructed from the Montana-Wyoming coal fields to the West Coast consumption centers and the BPA policy of paralleling existing transmission lines makes it irresponsible to discuss impacts of this particular transmission line as though it were isolated from those of lines to be built in the next 30 years. The probable long range impacts of the proposed corridor, including the effects of probable additional future lines in the corridor, must be fully addressed.

3. Loss of Taxes to State and Counties.

If the BPA builds the proposed line the counties and state will lose tax revenue that would be forthcoming if the transmission line were built by the consortium of private utility companies. Over the life of the transmission line a great loss of tax revenue would occur. The BPA-build decision would set a precedent for construction of future transmission lines from the Montana-Wyoming coal fields to the West Coast. The annual loss would be multiplied by the number of years and the number of lines built by BPA.

The argument has been given that to pay taxes would increase electric rates. Thus, to pay taxes would be detrimental to the nation's electricity users. But, taxes on electric facilities are a cost of producing electricity. Costs must be spread to all electricity users instead of just to counties through which the line travels. To do otherwise would be to ignore the true costs of providing electricity. If BPA builds the proposed line, payment in lieu of taxes should be made every year to counties and the state. The amount should equal

in the Boulder and Deer Lodge areas." This is an example of the federal agencies' pattern of decision making. That is, the decision is made before completion of procedures that are required by law to precede the decision. The results of the subsequent studies are molded to support the decision already made.

6. Centerline Survey

The survey of the centerline from Townsend to Garrison is another example of the preselection problem. The decision was made before the process was completed. NEPA requires an unbiased choice among alternatives. Careful phrasing of words cannot conceal the fact that BPA has reached a decision on the centerline. Studies done subsequent to this selection will be interpreted to support the centerline location.

7. Public Issues and Agency Concerns

On page i. of the Draft Supplement, ten public issues and agency concerns are listed. They resulted from meetings to allow public participation in the decision making process. These issues are not addressed in the draft supplement. Instead of answering the public's questions the BPA has chosen five other issues to be resolved in the supplement. The BPA has solicited public concerns and questions but has failed to include discussions of them in the EIS. The BPA should address all ten issues and answer the public's questions in good faith.

8. Lack of Cost/Benefit Analysis

The BPA has failed to adequately assess the true costs of various options for the route location and line construction. NEPA requires a cost-benefit analysis including direct and indirect costs, environmental costs, and short and long term costs. The draft supplement does not remedy the failure of the draft EIS to consider these impacts. A cost-benefit analysis that fails to consider the impacts of tax loss to counties and the state is inaccurate and misleading.

April 13, 1981

Bureau of Land Management
222 N. 32nd St.
P.O. Box 30157
Billings, Montana 59107

Dear Sirs:

These are my comments on the Draft Supplement to the Colstrip Project Environmental Impact Statement.

BPA AUTHORITY EAST OF THE CONTINENTAL DIVIDE

Enabling legislation places jurisdictional limits on BPA activities at the edge of the Columbia River Basin, except in special circumstances. Where does the BPA get its legislative authority, either specific or implied, to construct transmission lines east of the Continental Divide?

COMPLIANCE WITH NFSA

Presuming that BPA will have to acquire rights-of-way from the USFS and the BLM for this line, does the BPA intend to comply with Montana's Major Facility Siting Act, as required by Section 506 of the Federal Land Policy and Management Act?

ECONOMIC IMPACTS

Your discussion of economic impacts should indicate how much tax revenue would have been paid to the state and the involved counties if the planned facilities had been built by private utilities, as the state presumed in granting the Colstrip Project its Certificate under NFSA. Will the BPA seek authorization from Congress to make payments in lieu of taxes based on those amounts? Your analysis should of course include the tax consequence of depreciation of property adjacent to the right-of-way. Does the BPA intend to compensate landowners adjacent to the right-of-way for the depreciation of their property resulting from the construction of this line and the establishment of a new major transmission corridor?

SEGMENTATION

Any division of the Colstrip-Bell transmission line project for environmental analysis must be arbitrary as each terminus point predetermines the terminus point of the adjacent segment. This severely limits the range of alternatives that can be evaluated and makes evaluation of the cumulative impacts of all the segments impossible. I find both of these consequences unacceptable.

PRESERVATION

It appears that the route eventually chosen by the Federal land managers in their original Record of Decision on the Colstrip-Bell transmission line route was selected prior to the preparation of the Colstrip EIS, presumably to make use of BPA's vacant right-of-way adjacent to its existing 230-kV line.

Philip M. Barrett
Comments on Colstrip Draft Supplement
page 3

IMPACTS ON THE HUMAN ENVIRONMENT

Both this Draft Supplement and the Colstrip EIS (by reference) are grossly deficient in their analysis of impacts on the human environment. This can perhaps be related to the fact that most of the people involved in these studies are wildland managers and lack expertise in analyzing impacts on humans. This deficiency is best evidenced by the fact that most of the current conflicts over the Colstrip-Bell transmission line are in the human impact arena. There is more to living with a high-voltage transmission line than looking at it or being bombarded by electromagnetic radiation from it. Those stigmas should be better identified and evaluated in this Draft Supplement. For all possible impacts (but especially esthetic, social and health related), you at least should discriminate between casual encounters and prolonged, day-to-day exposure.

LANDOWNER NOTIFICATION

If anything has been learned by the BPA in its Townsend-Bell project it should be that receipt of adequate public input on a transmission line project requires adoption of landowner notification procedures heretofore thought to be extraordinary. BPA's decision to notify landowners crossed by the Hot Springs-Bell segment alternative corridors is consistent with that finding. Hence the BPA's failure to directly notify landowners within at least one mile on either side of these proposed alternative corridors is reprehensible. Such interagency inconsistency must be remedied by immediately notifying those affected landowners of this proposed action and delaying the filing of a Final Supplement until they have had a chance to comment on this project.

RELIABILITY

To determine the saturation level of a corridor it is important to know how many lines could go out of service in an accident without bringing down the entire intertied Northwest electrical grid system. The number of lines that can go down without causing a catastrophic failure probably should not be exceeded in a single corridor. Fires can be a problem as evidenced by the recent black-out in Utah affecting nearly one million people apparently caused by arcing between conductors induced by ionization of gases and particles in the smoke from a fire under a single 230-kV line. The possible effects of forest fires on this line and the risks associated with running several lines through forested areas should be evaluated in this Draft Supplement. Possibly you should avoid dryer south facing slopes in selecting a route. Can operation and maintenance of high-voltage transmission lines cause forest fires? Also in consideration of system-wide reliability, geologic hazards that could take out towers for more than one line in a single event, such as active alluvial fans and faults, should probably be avoided.

CONCLUSION

To remedy the problems I have outlined in my sections on segmentation, preservation, future plans and others, I suggest that, at the least, a regional study of all corridor alternatives from eastern Montana to eastern Washington examining the transmission needs identified by the BPA in its "2020 study" should be conducted and incorporated in this EIS before any new major transmission corridors are established. The need for the regional scope of such a study is highlighted by the fact that many of these same problems need to be

Philip M. Barrett
Comments on Colstrip Draft Supplement
page 2

Only that could explain how the federal and state (in NFSA Certification) analyses chose different corridor routes. It appears that the BPA is making long range resource commitments based on the short term expediency of already holding transmission line easements.

BPA now plans to do supplemental or revised EIS's for the entire length of the line it is constructing from Townsend to Bell. This to me is strong evidence that the original environmental analysis used by the Federal land managers for their Record of Decision on the Colstrip Project corridor route was seriously flawed. For as the environmental desirability of this corridor has not been adequately established, and it should be restudied. Dividing the environmental analysis of this transmission line into segments obviates the possibility of addressing that question, a situation unacceptable to me.

FUTURE PLANS

This project involves two distinct federal actions. The first is the construction of a transmission line. The second is the land use planning commitment of a corridor to possible future expansion. This latter action takes on heightened significance upon examination of BPA's "2020 study", which deplorably was not even mentioned in this Draft Supplement. This Draft Supplement abjectly fails to evaluate the impacts of the establishment of a new major transmission corridor.

The suitability of a corridor for future expansion (and especially the environmental consequences thereof) is obviously a factor that should be taken into consideration in choosing a corridor, but it must be documented. I see no evidence in this Draft Supplement that it has been considered. Considering the likelihood of the construction of more generation capacity east of the Continental Divide, it would be criminal to choose a corridor at this point that is not a good option environmentally for eventual expansion.

Public policy on several basic questions regarding these transmission corridors needs to be discussed in a public forum and included in this EIS. Of the seven corridors identified in the "2020 study", will we open each with a first line before doubling up on any, or will we saturate the first corridor before opening the second? At what level will we consider each corridor saturated? Are corridors best located in our river valleys where the most direct impacts on the human environment can be expected?

As regards future expansion, how many lines could we reasonably expect in this corridor in the future? What is the ultimate carrying capacity of this corridor? What constrains such capacity to that number of lines? Is this corridor being considered to integrate power from Montana Power Company's Resource '89 facility at Great Falls or the Alberta Export Power Project? If not, what corridors are under consideration for those transmission lines?

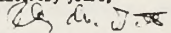
What is the status of the plan to eventually convert one side of this double circuit line to 1100-kV DC? I saw no mention of this possibility in this Draft Supplement. Where would the terminal points of this service be located? Would this service be tapped at any point between the terminal points? What is the technical feasibility of burying such lines, and is that an environmentally acceptable practice?

Philip M. Barrett
Comments on Colstrip Draft Supplement
page 4

addressed on another transmission line project in the area. That project is BPA's North Idaho/northwest Montana Support and Libby Integration project for which a Supplemental EIS is currently being prepared.

Irrevocable commitments on transmission corridors will be made soon. Considering the broad mandate of Congress under the National Environmental Policy Act of 1969, the need to avoid the grave long term deleterious effects of sound decisions based on inadequate planning and analysis is vastly more important than the short term problems that could result from the delays that might be necessary at this point to allow a careful reevaluation of this project.

Sincerely yours,


Philip M. Barrett
1537 S. 7th W.
Missoula, Montana 59801



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Billings Area Office
Federal Building, Room 3035
316 North 26th Street
Billings, Montana 59101

IN REPLY REFER TO:

ES

April 13, 1981

Neil Morck
BLM
222 N. 32nd St.
P.O. Box 30157
Billings, MT 59101

Dear Mr. Morck:

We have reviewed the Colstrip Project Draft Supplement (OES 81-8) and have the following comments.

In the Boulder-Basin area the designated corridor has the lowest numerical rating for both fish and wildlife impacts and surface water impacts. This alternative, however, crosses deer and elk winter range in both its eastern and western portions. Of primary concern is the big game winter range in the Berkin Flat-Thunderbolt Creek area. This is an isolated winter range for a substantial elk herd (400+). All three proposed corridors pass through this winter range and significant adverse impacts may occur. In that regard, we strongly support implementation of mitigation measures 1 and 2 (pg. 2-2), which address potential impacts on big game winter range. We feel these efforts would provide valuable information useful in determining what impacts occur as a result of line construction and operation. Should the study and monitoring efforts reveal significant impacts to the big game herds in the area, specific mitigation may be necessary.

The Black Mountain alternative in combination with alternative AAA would appear to be the preferred route in the Deer Lodge Valley area. The Black Mountain corridor passes through an area where access is presently available and where development activity has occurred in the past. The Thunderbolt Mountain route would, on the other hand, run through an area that is, at this time, basically unroaded. The impacts associated with road and line construction along this route in an inaccessible, undeveloped area appear greater than along the Black Mountain alternative. Of the three potential valley crossings which could be used with the Black Mountain alternative, route A would involve construction in big game winter range on the west side of the Deer Lodge Valley and route AA would involve crossing both the Clark Fork and the Little Blackfoot rivers. Alternative AAA, however, avoids the winter range along the west side of the valley and would require a crossing only over the Clark Fork.

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
FEDERAL BUILDING
P.O. BOX 7668
MISSOULA, MONTANA 59807

1950
APR 16 1981



Mr. Neil Morck
USDI Bureau of Land Management
P. O. Box 30157
Billings, MT 59107

Dear Neil:

We have reviewed the Draft Supplement to the Final Colstrip Project Environmental Impact Statement and offer the following comments:

1. Page 1-5, bottom of page

"... development and jurisdictional criteria ..."

Item 2 - Length of the corridor should not be listed as one of the criteria. Usually, cost of construction and cost of electrical losses are directly proportionate to length of line.

Adding length of line tends to overweight those factors already accounted for in costs and losses.

2. Page 1-8

The interconnections of the MPC and BPA 230 KV transmission lines with the substation are referred to in this paragraph, but never discussed in the text of the report. Because the 230 KV lines were such a factor in discounting this particular substation site, the 230 KV lines need to be addressed in the Supplement.

3. Page 2-2, MITIGATION

Item 2 - It is not clear what type of monitoring is to be accomplished, by whom, or for what purpose. It may be better to strengthen item 1 and drop item 2.

With regard to the substation site, alternative site 3 would appear to be the preferred site. This is particularly true if the station can be located away from the calving ground in Section 21, T 19 N., R 11 W. Serious conflicts with big game winter range would apparently be unavoidable at sites 1 and 2.

The mitigation measures included in the original EIS for the Colstrip Project, which applied to the transmission line, should also apply to all alternative corridors considered in the supplement. This would include the mitigation measures presented in Vol. 1, Section 3.3 and Vol. II, Appendix A3. 3.3 of the Colstrip EIS. These measures as well as those proposed on page 2-2 of the supplement should apply no matter which corridor is finally selected. We are particularly concerned that those measures designed to protect riparian areas, wetlands, water quality, and "special" wildlife habitats, such as winter range and calving areas, be adhered to as closely as possible.

We appreciate the opportunity to comment on this draft supplement.

Sincerely,

Wally Steucke
Wally Steucke
Area Manager

cc: Montana Department of Fish, Wildlife, and Parks, Helena, MT

Mr. Neil Morck

-2-

4. Tables 1 and 4, Comparison of Alternates

Terminology should be checked for clarity. In the text, various items are discussed under Land Use. The term "Land Management Plans" is used in the tables, but not in the text. This should be clarified to avoid terminology problems, or added as another item in the text.

5. Figure titled: UNIQUE NATURAL RESOURCES
IMPACT RATINGS

Are the colors on the map correct?

6. Page 8-7, Animals

As written: "There have been unconfirmed reports of grizzly bear along the Continental Divide ..."

Wasn't a grizzly killed in this location in early 1980?

7. Tables 3 and 6, Corridor Evaluation Summary

Item 1 - Cost of Construction

It may help to clarify the comparison of cost with one of the circle indicators, as an indication of weight given to this item.

Item 5 - Estimated Costs of Electrical Losses

Estimated dollar figures in addition to the circle indicators would help in clarifying the differences in the three corridors.

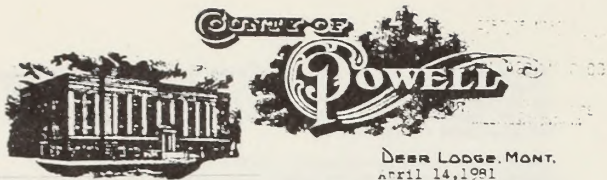
We also suggest that the Final EIS Supplement contain a discussion on the relationship of the Colstrip transmission project to Montana Power Company's proposed Resource 89 generation and transmission project.

Thank you for the opportunity to review this document.

Sincerely,

TOM COSTON
Regional Forester

cc: Drlg.
Lolo
R&L
E
RF
PP&B
WO - Environmental Coordinator



DEER LODGE, MONT.
April 14, 1981

Neil Morck
Bureau of Land Management
222 N. 32nd Street
Billings, Montana 59107

Dear Mr. Morck,

Being a Commissioner of Powell County, and representing the Association of Montana County Commissioners at the National Association of Commissioners, and as a concerned citizen, I would like to submit this statement, for the record, to the Supplemental Colstrip EIS, in reference to the B.P.A. Twin 500 kV Power Line.

On Jan. 17, 1981, the National Agricultural Land Study, co-chaired by the U.S. Dept. of Agriculture, and the Council on Environmental Quality, published their final report, after a lengthy study on the preservation of Prime Farming Land.

In this report, it was noted, that over the last ten years, cropland harvested had increased by over 50 million acres, in order to meet both our domestic and foreign food supplies. Yet, the U.S. has been converting agricultural land for non-agricultural purposes, at the rate of 3 million acres per year. The land has been paved on, built on, flooded on, and many other uses, taking it permanently from agricultural use. If this trend is allowed to persist, by the year 2000, there will be a food crisis equivalent to that of the energy crisis of today.

Agriculture production today, is being pushed from the prime farm land to the fringe areas, where production is less, and expenses much higher.

Where does the B.P.A. fit into this picture?

One of the primary objectives of the study was to identify the various Federal Agencies that help fuel this take over of prime farm land and potential prime land.

Agencies, such as the Farmers Home Administration, Dept. of Housing and Urban Development, for vast housing projects; the Dept. of Transportation, for vast highway systems; and the Dept. of Energy for electrical lines, and pipe lines crossing prime farmland.

The original corridor proposed by the B.P.A., was a two mile wide corridor, passing through some of the most productive and potential cropland in western Montana. I am convinced, that this power line can be located in other areas, to minimize the effect on: 1. Residential areas. 2. Both prime, and potential prime farm land. 3. Grazing lands.

I feel that the Power line should cross Public land, wherever possible, to eliminate any nuisance factors to the private tax paying landowners. Any disturbance to wildlife, can be compensated for, by planting a vegetative covering without interfering with the power line.

I also feel that it is unfair to the taxpayers of Powell County to have a federally constructed power line pass through our County, without any support to the local tax base. The original intent, was for the Mont. Power Co. to construct this line. In every County that M.P.C. has lines in, they pay taxes towards the support of that community.

Another fact is, that this power will be at a lower rate on B.P.A. lines, but the residents of Powell County will not see a lowering of their rates, for the simple reason, they still have to get their power from a private Power Company.

In closing, I would like to urge you to take another look at your Corridor Sites, to look at the private sector, and relate to the landowners feelings on the location of this Power line. Also, to avoid wherever possible-- residential areas, prime farming land, private land, and to consider the impacts this will have on local government tax base, and to keep the people affected by this Power line, informed at all times, as to what is going on. Thank you.

Sincerely,

Thomas A. Beck
Powell County Commissioner
Thomas A. Beck

Clayton E. Herron
Michael Meloy
Richard J. Llewellyn

Herron, Meloy & Llewellyn

ATTORNEYS AT LAW

SECURITIES BUILDING

P.O. BOX 783

HELENA, MONTANA 59624

AREA CODE 406
PHONE
442-9430
442-2442

Neil Morck
April 17, 1981
Page Two

April 17, 1981

Mr. Neil Morck
U.S. Department of the Interior
Bureau of Land Management
222 N. 32nd Street
P.O. Box 30157
Billings, Montana 59107

Re: DES 81-8
Draft Supplement to the
Colstrip Project Final EIS
(FES 79-29)

Dear Mr. Morck:

I submit this letter, on behalf of myself and various family members and in-laws, as our written comment on the Draft Supplement to the Colstrip Project EIS and, to the extent that the same are applicable, to the underlying Colstrip Project Final EIS.

By way of introduction, I would comment that my family and my wife's family own various mining properties, some patented and some not, in the general vicinity of Elkhorn Creek, Upper Basin Creek, and other properties in the vicinity of and adjacent to the proposed Bonneville Power Administration powerline corridor. Some of these properties have an economic value for sale as recreation properties, in addition to their mineral value. My father and I have recently attempted to put together a mining project of some substantial financial magnitude in the vicinity of Basin, in an area very close to the proposed powerline corridor. Further, I am a former Jefferson County Attorney, still practice law in Jefferson County, and a substantial portion of my clientele resides there. Anything that affects the economy of the area has a very direct economic effect upon me.

Further, and of no small importance to me, my family and I utilize the area adjacent to and along the length of the proposed powerline corridor intensively for recreational purposes, including fishing, hunting, backpacking and picnicking. My wife and I (not to mention other family members) spend approximately 100 person days, involved in recreational pursuits, in the immediate vicinity of the proposed powerline corridor. I therefore

speak from the status of the affected recreational user, who will be adversely affected by the proposed powerline project. I do not believe that anyone has commented previously, in any of the written or oral comments which I have seen and heard, from this perspective.

It is my view that your proposed action, the designation of the powerline corridor and the granting to BPA of the authority to construct a 1000 kilovolt transmission line therein, is based upon processes and environmental impact analyses which are not only grossly deficient but are also unlawful. With the foregoing in mind, I would make the following brief comments:

1. The proposed action violates the Federal Land Policy and Management Act of 1976, P.L. 94-579, 43 U.S.C. 1701, et seq., in that you have totally failed to coordinate your decision-making process with the planning and management activities of various agencies of the State of Montana which are responsible for the planning of transmission facility corridors under the Montana Major Facility Siting Act, Section 75-20-101, et seq., M.C.A.

2. Your proposed action will not be taken or conducted in accordance with any coordinated land use plan developed by any of the participating federal agencies pursuant to the Federal Land Policy and Management Act of 1976, specifically 43 U.S.C. Section 1712.

3. Your proposed action will allow the BPA to construct, on federal land and in the proposed corridor, a powerline project which that agency is not authorized by law to construct, to the extent that there is no underlying federal authority allowing the BPA to construct any portion of the actual powerline facility between Colstrip and Hot Springs, Montana. Instead, the BPA is authorized only to "interconnect" with the powerline facility, which Congress contemplated would be constructed by the Montana Power Company, pursuant to authorization by the State of Montana through its Major Facility Siting Act and review processes.

4. Your proposed action, and the manner in which you have arrived at the same, have deprived us of our right to due process of law under the Fifth Amendment of the Constitution of the United States, in that you have intentionally conducted the process so as to

deprive us of our opportunity to comment and participate in the decision-making process in its original (and most important) stages.

5. Your actions, in the preparation of the Draft Supplement EIS and the underlying Final EIS, are in violation of the National Environmental Policy Act of 1969, P.L. 91-190, 42 U.S.C. Section 4321, et seq., in that your agency (in Mr. Michael J. Penfold's letter of February 20, 1981) clearly states that "agency managers have reached accord on a tentative preference for routes in the Boulder and Deer Lodge areas." This "accord" was reached prior to the conclusion of full public participation in the review process and prior to the expiration of the time in which your agency is required to take note of public comment. This action constitutes not only a violation of the express provisions of NEPA, and the implementing federal regulations, but also of our rights to due process of law under the Fifth Amendment of the United States Constitution. We note that your agency is obviously bound to a pre-determined position, as it appears that you have allowed BPA project engineers to already stake and lay out their proposed corridor and access routes on the federal lands.

6. The Draft EIS and the underlying Final EIS are violative of NEPA in that they fail to adequately study, develop and describe appropriate alternatives to your proposed course of action, which course of action involves unresolved conflicts concerning such alternatives and involves admitted adverse environmental effects which cannot be avoided and which are irreversible and irretrievable. In this regard, we specifically note the absence of a "no-action" alternative, and we note the very limited alternatives which you do manage to propose. None of your alternative corridor routes have ever been acceptable to anyone I have talked to and, contrary to the position taken by some of your agents, the persons opposing your proposals have opposed them in total from the start (in other words, no powerline through the Boulder Valley or close to it has ever been acceptable).

7. Your Draft EIS and the original Final EIS are deficient in that they fail to adequately review, consider and weigh various health and environmental impacts of the various proposed alternative centerlines, as well as of the total project in general. This is particularly unique in view of the fact that your "agency managers have reached accord on the route to

Neil Morck
April 17, 1981
Page Five

(c) Your environmental impact analysis is totally deficient in regard to the impacts upon endangered species. It is a matter of record that bald and golden eagles nest in the vicinity of Basin and that the federally funded Interstate Highway 15 project, between Boulder and Elk Park, is subject to some very substantial constraints on construction as a result. Further, I have on several occasions observed eagles in the Thunderbolt Mountain and Lower Cottonwood Creek vicinities. Clearing of the corridor and the construction of the powerline itself will have a serious impact upon these eagles. A single helicopter flight, which you utilized to assess the potential impacts, is a totally deficient method of assessing the same.

8. Your analysis of the social and economic impacts is definitely deficient. A substantial portion of the local economy is based upon persons who utilize the so-called "health mines" in the vicinity of Boulder and Basin. I have met a number of these persons (who include such notables as the late Gen. Omar Bradley who was a frequent visitor to the health mines), and it is unlikely that any of them would utilize the mines in the vicinity of the powerline corridor. Any person who believes that a health mine is "healthy" will without a doubt believe that a powerline is not.

9. Your analysis is grossly deficient as to the impacts upon historic sites in the area. This includes not only the "ghost towns" of Elkhorn and Comet, but also the Boulder Hot Springs (formerly the Diamond S Ranchotel). Most of the people who visit these areas do not come here to subject themselves to the visual impacts of 165 foot tall transmission towers.

10. Your environmental impact analysis is grossly deficient in its analysis of impacts upon local wilderness study areas. The Elkhorn Wilderness Study Area is immediately adjacent to the proposed powerline corridor, and the visual impact of the powerline will literally destroy a good portion of the study area as wilderness. This will have a secondary economic impact upon the local area, as many of the people who visit the area come here to use the proposed Wilderness area for recreational purposes. They are not likely to do so if they have to spend their time on top of Elkhorn Peak staring down at the powerline and powerline corridor.

I would conclude my comments by noting that I

Neil Morck
April 17, 1981
Page Four

be selected", and it is a clear indication that you have proceeded with a "public be damned" attitude from the start. Specifically, we note the following:

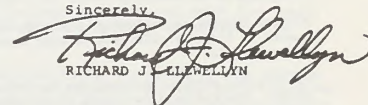
(a) All of the proposed alternatives have significant adverse impacts upon wildlife, especially upon critical deer and elk winter range in the area between Basin and Garrison. Your failure to propose any other alternatives (such as the corridor previously approved by the Montana Board of Natural Resources, for the Montana Power Company proposal, pursuant to the Montana Major Facility Siting Act review) makes a mockery of NEPA and the Federal Land Management and Policy Act. The damage and destruction which will be caused to the deer and elk herds in this area will further have a direct socio-economic impact upon the local economies, as revenues from activities associated with hunting (a major recreational activity in this area) will be greatly diminished. No one will want to come to the area to hunt elk under a 1000 kilovolt powerline. (Query: Will I be able to let go of my rifle, because of the "release factor", when I walk under the line with it?)

(b) Your environmental impact analysis, in all cases, fails to adequately assess, consider and weigh the impact of powerline construction and corridor maintenance on surface waters within the proposed corridor and the limited alternatives. We note that the proposed BPA route has the second highest total impacts on surface waters of all possible routes through the area. In contrast, the corridor route proposed by the Montana Power Company and approved by the Montana Board of Natural Resources has the second lowest total impacts. Worse yet, your environmental impact analysis of the effects of the proposed application of herbicides of an unspecified type is totally deficient. The BPA perhaps has something in mind like "Agent Orange"? What will this do to fish and wildlife populations and persons using the area for recreational purposes? Certainly, the effects will be adverse and major.

Neil Morck
April 17, 1981
Page Six

grew up in the shadow of the Bonneville Power Administration in eastern Washington. One of my uncles was one of the original project engineers on the Grand Coulee Dam Project on the Columbia River and he died with one of the highest seniority positions at the Hanford Atomic Works. He witnessed the wholesale destruction of the Columbia River and its tributaries by the Bonneville Power Administration and, believe me, he was very sorry for it. I would hope that we don't leave the same legacy to our children that he left to his.

Sincerely,


RICHARD J. KELLELY

RJL/ks



United States
Department of
Agriculture

Forest
Service

Deerlodge
National
Forest

P.O. Box 400
Federal Building
Butte, MT 59703

2720 Colstrip 500 KV Transmission Line April 17, 1981

Comments Pertaining to Final Colstrip
Project EIS BILLINGS, MONTANA

Neil Morck
Bureau of Land Management
222 N. 32nd Street
P.O. Box 30157
Billings, MT 59107

The following comments pertaining to the Draft Supplement to the Final Colstrip Project EIS are my concerns for the mitigation measures on page 2-2 of the Supplement.

Retain all of mitigation item #1.

I recommend adding the following mitigation measures:

1. Raptor roosting and nesting platforms should be installed along the transmission line, as identified in the centerline environmental analysis.
2. Large orange markers used for identification of transmission lines to low level aircraft are needed from Cataract Creek to Thunderbolt Creek, as determined in the centerline environmental analysis.

Thank you for the opportunity to comment.

Dean Graham
DEAN GRAHAM
Wildlife Biologist

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

ROCKY MOUNTAIN REGION
3001 EAST 17TH AVENUE
DENVER, COLORADO 80202



APR 20 1981

Mr. Neil Morck
U.S. Department of the Interior
Bureau of Land Management
P.O. Box 30157
Billings, Montana 59107

Dear Mr. Morck:

We have completed our review of the Colstrip Project Draft Supplement to the Final Environmental Impact Statement. As pointed out in our comments of January 31, 1979, it is highly probable that the accepted alternative will be subject to Federal Aviation Regulations Part 77, necessitating submission of Federal Aviation Administration Form 7460-1.

Sincerely,

Stanley K. Oleson

Stanley K. Oleson
Chief, Planning and Appraisal Staff



United States
Department of
Agriculture

Forest
Service

Gallatin
National
Forest

P.O. Box 130
Federal Building
Bozeman, MT 59715

2720 Colstrip 500 KV Transmission Line April 17, 1981

Comments Regarding Draft Supplement
to Final Colstrip EIS

Neil Morck
Bureau of Land Management
222 N. 32nd St.
P.O. Box 30157
Billings, MT 59107

I have the following comments pertaining to the Draft Supplement to the Final Colstrip EIS.

Project impacts to fisheries were only briefly discussed in Appendix B. I was unable to find any reference to what trout species were identified, or amount of angler use.

Larva scale surface disturbances can effect the quantity as well as quality of water. The sediment from such disturbances can reduce both the quantity and quality of pools in streams necessary for healthy trout populations.

There is no mention of offsite impacts to fisheries in the Supplement. Heavy sediment can be carried several miles downstream, adversely influencing the water quality in larger streams, such as the Boulder River, that are often considered free of any impacts because they are not in the immediate construction area.

Culverts can impede fish movement, particularly where stream gradients are steep. This is critical where roads cross small tributaries considered unsuitable for resident fish, but are used for a few months each year as spawning streams. Such spawning streams are very important for the recruitment of downstream fisheries.

Thank you for the opportunity to comment.

James R. Lloyd
JAMES R. LLOYD
Zone Fisheries Biologist

John V. Evans, Governor
Daniel T. Emborg, Administrator



State Capitol Building
Boise, Idaho 83720

DIVISION OF ECONOMIC AND COMMUNITY AFFAIRS

April 21, 1981

Michael J. Penfold
Bureau of Land Management
222 North 32nd Street
P.O. Box 30157
Billings, Montana 59107

Dear Mr. Penfold:

The Idaho State Clearinghouse has completed its review on the DRAFT SUPPLEMENT TO THE FINAL COLSTRIP PROJECT ENVIRONMENTAL STATEMENT - SAI #00315619. The following agencies were contacted for their review and comment:

East Central Idaho Planning and Development Association
Department of Water Resources
Department of Lands
Department of Parks and Recreation
Department of Agriculture
Department of Fish and Game

Comments were not received from the reviewing agencies at the time of sign-off. Thank you for letting us be of assistance in your Draft Supplement Review. If you have any questions, please contact myself or Lois Wade at 208-334-4718.

Sincerely,

Gloria Mabbutt
Gloria Mabbutt, Coordinator
Idaho State Clearinghouse

GM/1w



IDAHO
A LAND FOR ALL IDAHONIANS



MAY 28 1981

Ref: BMO

Mr. John Hooson, Chairman
Colstrip Interagency Steering Committee
Department of Energy
Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208

Dear Mr. Hooson:

Thank you for the opportunity to comment on the draft supplement to the Colstrip Project Final EIS. We are sorry there was some confusion regarding where to send the EIS but hope our comments are still timely and of use in your final EIS decisions.

We support the alternate transmission line with the least overall impacts, including those not only to the natural resources but to farm lands and human habitations as well. Obviously, there will be no line routing that can totally avoid developed land while avoiding the critical wildlife areas and highly erosive soils.

Based on the information presented in the draft EIS, we believe that the "Designated Corridor" for the Boulder area to be the best compromise. In the Deer Lodge area it appears that the "Thunderbolt-AA" alternative is a good choice.

Although both of the above alternatives cross some irrigated acreage (1.2 miles at Boulder; 0.3 mile at Deer Lodge) they both are much more acceptable in terms of water quality, fisheries, wildlife, and overall environmental damage. We also believe that the damage to the small amount of irrigated land to be crossed could be mitigated and the owners properly compensated. Surely, the Colstrip lines will encounter many other similar situations throughout their length.

Any line routing will have severe aesthetic impacts. We certainly understand people's resistance to these lines and their desire not to have a line running across their property. However, placing the lines more "out of sight" will apparently lead to other severe damages to the area environment that we do not support.

According to EPA's system for rating draft EIS's this statement is rated ER-1 (environmental reservations - sufficient information). If you have any questions, please contact Mr. Gene Taylor in our Helena, Montana Office at (FTS) 585-5486.

Sincerely yours,

Roger Williams
Roger Williams
Regional Administrator



SKYLINE SPORTSMEN'S ASSOCIATION, INC.

P.O. BOX 173
MONTICELLO, MONTANA
59701

BUTTE, MONTANA 59701

May 10, 1981

TO:	Mr. Morck
FROM:	Neil Morck
SUBJECT:	Colstrip Project
DATE:	May 10, 1981
TIME:	1:30 PM
PLACE:	Butte, Montana
RECEIVED:	
FILED:	

Neil Morck
Bureau of Land Management
P. O. Box 30157
Billings, Montana 59107

Dear Mr. Morck:

All the proposed routes for the transmission line in the Townsend-Jarrison merge in the bottleneck at Pinn Gulch, so it seems definite that the line will pass this point. However, this is a winter range for the North Boulder elk herd, often supporting about 400 animals.

We ask that after the transmission has been built that the roads between the towers be closed to all traffic not necessary to maintain the towers. Traffic should be limited as much as possible so the elk will not be disturbed.

We trust that your studies have satisfied you that this high-voltage electricity will not affect the fertility of big game animals.

Yours very truly,

SKYLINE SPORTSMEN'S ASSOCIATION

Gene Taylor

United States Dept. of the Interior
Bureau of Land Management
P. O. Box 30157
Billings, Montana, 59107

Attention Neil Morck

Gentlemen:

For your consideration we wish to submit our joint statement as to how the Designated Corridor, for the Bonneville Power Administration power line would affect the irrigated farm land on our adjoining ranches, in the Deer Lodge Valley.

When we first learned of the proposed line through our valley we were informed by BPA personnel that the centerline of the Designated Corridor would follow the border between our two ranches. In recent years both ranches have been greatly improved. We have installed sprinkler irrigation systems to conserve water and increase productivity. All this expense and future productivity will be nullified if the line is allowed to go through this area.

Further, should the line be built on Johnson property, as the sprinkler lines run north and south, all lines would have to be shortened to accommodate the power line. This would result in the inability to irrigate prime farm land. Should the line be built on the Kelson property, where the sprinkler lines run east and west, the main water line runs north and south. This mainline would have to be shortened to protect the pump from fallout. This would result in the loss of prime productive acres for the Kelson property.

We wish to call your attention to paragraph 3, page 3-10, Colstrip Project EIS, "Residential". This statement is completely false. Sixteen residences would be directly affected in the irrigated crop land area, and more in the two mile corridor, if the above mentioned centerline were chosen in the Designated Corridor. Not only the economic value would be affected, but the environmental factors resulting from fallout, we believe, are undetermined. There is no way to put a value on the esthetic impact the line would have on us and our neighbors.

As this power line is to be forever we hope in making your final decision you will deal favorably with those of us who not only depend on our farm land for our livelihood, but also live and raise our children in this environment.

Yours sincerely,

Mrs. Lou C. Kelson
620 Lake Hill Road

Carl A. Johnson
911 Dempsey Road
Deer Lodge, Montana 59722

Carl A. Johnson
Carl A. Johnson

ROUTING	INITIALS
SO	
ASD	
ED	
REC	
TS	
MS	
P. LG	
FILED	

Deer Lodge, Montana
April 20, 1981

Letter to be included as part of
this Public Hearing March 25th 1981
held by the BPA.

I'd like to go on record as
saying that I think this so-called
"Public Hearing" is a farce just like
all the rest I've been to. I feel
the only people who are truly listen-
ing are those who comprise the
public audience, those who come here
to voice their opposition and opinions.
I understand all our comments ^{will be} ~~and~~
included in a final Environmental
Impact Statement decision this June.
Then what? The BPA picks their route.
Well I find The EIS Draft Supplement
very deficient because for those of
us who don't want the power line
there is no alternative presented.
Why is it beyond the BPA's scope to
consider transporting this coal to the
States that need it? Which brings
me to the next question. Why is it
beyond the Dept. of Energy's scope (of
which the BPA is part of) to consider alter-

tankers filled with oil sitting outside
the Port of New York City. We all shed
a sigh of relief when it was over only
to go to our favorite gas pump and find
out we didn't have to wait in line for
gas anymore but we had to pay a hell
of a lot more for our gas.

~~What is the point of this?~~
We don't need more, more bureaucratic
lies. We need less. We need more
common sense + truth. We need
less gov't that doesn't represent us
and more gov't that does. We need
someone who'll listen.

Joy Lewis
Box 8
Busin, Mt.
59601

native renewable non-polluting energy
resources? All one has to do is look
at The DOE's budget to understand that
question. 76% of their budget is de-
voted to Nuclear Programs as well as
coal and synfuel development. A mere
1% is devoted to alternative energy and
7% to conservation. It's not hard for me
to consider that if that 76% was
plated for Renewable Energy Resources
and conservation we would have no need
for ~~stranded~~ High Powered Electrical
Transmission lines or the like including
the Bonneville Power Administration.

I'm tired of the Federal Gov't telling
me there is a power shortage. Everyone
in their right mind knows that 99%
of the energy we consume today is
non-renewable. Someday ~~it's~~ ^{it's} going to
run out. But I'm tired of the Gov't
spreading outright lies through the
news media that ^{there} is an energy shortage
and scaring people to believe that they
need more + more + more.

I put in gas lines back east for hours
during the first manufactured gas shortage
back in '73 while there were many many

COMMENTS ON COLSTRIP PROJECT EIS DRAFT SUPPLEMENT

I note that this Draft Supplement was prepared by three
departments of the Federal Government and was drawn up
to fulfill and serve solely their desires and objectives
with little mention and no concern for the private land
owner. This supplement is biased and a misrepresentation
of impact on private property.

I also note that the residents of the Gold Creek area are
strongly and unanimously opposed to the locating of the
proposed Substation at Gold Creek. All the people of
Granite County who are directly affected by this Project
are also strongly opposed to this location for good and
obvious reason.

With the help of these three Federal agencies, the Montana
Power and other Northwest Power Companies, has begun the
BARE of the State of Montana.

This is still a Government of the people, by the people
and for the people. The Gestapo-like tactics employed
by the BPA will not work in this society.

Chris L. Bowers

Member, Upper Clark Fork Valley
Protective Association



DSC-81-7426
Page 2

DSL-81-7220
D. 174 j

The statement about health effects is pathetic.
BPA is asking public to be guinea pigs.

③ I object to herbicides being used to control weeds. Barin Creek is still drinkable. That will make it not so.

One that I found was that lower elevations are warm & dry and upper elevations are cool & moist. ~~The opposite~~ This is generally considered dry country. Usually wetter lower down if at all.

Chan Webb
Box 453
Basin, Mt 59631

DSC-11-TL21
Page 1

DSC-81-TL21 10. BPA. has treated us, dealt w/us like
'dumb country folk' stalling, putting us
aside, sending diplomatic P.R. men to
satisfy us.

Comments on the proposed
BPA 500kv twin Power Line

- 1- BPA has put little or no emphasis on possible health hazards, considering them a "necessary evil" in our "advanced" technological society.
- 2- BPA has shown no willingness to be responsible for possible ^{health} problems arising (physical or psychological) from any aspect of the project; laying the burden of proof on the victim, or putting the responsibility on 'society', as above.
- 3- BPA has no provision for written or verbal agreement to take responsibility for future problems arising.
- 4- BPA has no way of measuring or reimbursing us for losses ^{such as} intangibles as, peace of mind, happiness with the earth & its natural etc. nor do they seem concerned with.
- 5- BPA intends to not only put twin 500kv power in our beautiful area but will use herbicides periodically and microwave transmission during construction. also large equipment, helicopters

DSC-51-TL21
Page 2

11. BPA has not shown a fair description of the situation here in its reports, showing no emphasis toward the peoples ^{growing} negative opinions/feelings, even showing inaccurate reports of the peoples ideas/feelings.
12. BPA has not done a thorough investigation of the wildlife habits.
13. BPA has not done a thorough investigation of the detrimental affects to health in people/animals of ^{electric} power. It is their responsibility to find out completely before laying it out to affect others.
14. ~~BPA should make provision that~~ BPA will use this right of way for future larger lines, without any need for investigations/reports.
15. BPA is using federal push to achieve its now federal goals.
16. BPA is generally slimy and I would rather not have slime in my environs.
17. BPA has no provision for possible future economic impact to the individual such as less tourism, more difficult hunting, difficulties in breeding livestock etc.

- 500⁺) etc. exactly the type of things I and many others have been trying to avoid by living here.
6. Not only is the Power line and its aspects esthetically ugly and unhealthy but I know I feel and hear ~~the~~ electricity's affect on/in my body.
7. Will BPA take responsibility for my having to truck water at least one mile because they have silted and muddied my drinking/living water Basin Creek? Possibly even affected ~~the~~ the water and its ~~level~~ content with electrical magnetic fields?
8. ~~the~~ BPA says 'minute amounts of ozone' but that and all other industrial output adds up. All the small impacts add up and have detrimental effects on man and the earth.
9. BPA considers the line and its affects in bits and pieces not a very concerned with the whole picture and how it affects the individual. A 'General' attitude.

U. S. Department of Interior
Bureau of Land Management
222 North 32nd Street
P.O. Box 30157
Billings, Montana 59107

Attestation: Mr. Neil Morck

Mr. Morck, the undersigned residents of the Gold Creek Community want to express their opposition to the construction of the BPA power transmission line and related substation at Gold Creek in the habited portions of the Clark Fork Valley as proposed in the February 1981 Colstrip Project EIS Draft. We will not accept the right-of-way as proposed is any of the alternatives and request that the following nine items be addressed and satisfactorily resolved before a final corridor is selected:

1. Why do all of the studied and preferred corridors exclude maximum use of public lands, both state and federal, in favor of private holdings? Our position is that maximum utilization of public lands (i.e. BLM, FS, State) should be a prime consideration in location of the corridor.
2. In view of the fact that the Colstrip Project EIS was prepared and presented jointly by the Bureau of Land Management, Forest Service and Bonneville Power Administration, and considering the observation stated in Item #1, is there a conflict of interest existing as concerns the corridors abandoned as unpreferable or not considered in the preparation of the EIS? We would

-1-

district to continue the service West. We will remain opposed to any construction until an exit route is established.

5. What effect will the establishment of the corridor and activation of a high voltage line have on existing power lines that service the area, and what are the plans for relocating the existing lines?
6. The Colstrip EIS presents erroneous figures on population and residence distribution and appears to give more consideration to protection of the wild game population and pristine character of certain public lands than it does to the citizens who reside in the vicinity of the proposed corridor and substation.
7. The corridor crosses the heart of the past gold mining operations, which have operated intermittently since the first gold in Montana was discovered at Gold Creek. Historically, there are many locations in the corridor that have significance, including the existence of artifacts from a large Chinese population that resided in the area during an earlier period of active gold mining. Further consideration should be given this heritage.
8. In view of the fact that the transmission planning obviously was in progress for many years on a corridor to transport the power from a project, Colstrip #3 and #4, which has been an active project for the past decade, we feel that the short time

-3-

specifically like the issues of the study agencies' positions concerning their planned use and wilderness study area projects aired as they relate to proposed and possible corridors utilizing maximum public land. We feel this is an area where the maximum number of people, including all power users serviced by the line, would benefit from the use of public land.

3. In view of the present proposed maximum utilization of private property in establishing the corridor, will there be a loss of tax base and what provisions will be made to assure adequate property tax relief to compensate the districts for tax base removed from the tax rolls and converted to public property? Who will pay for the expanded services and road maintenance required to support the increased usage on the present road system that construction and maintenance of the line and substation will create?
4. The segmentation approach to acquiring the corridor, although we recognize that alternatives are a necessity in preparing such a project, appears to be a split-and-divide tactic on the part of the planners. Gold Creek, in particular, is placed in a very compromising position, considering that the corridor planners bring a high voltage carrier into the heart of a habited area, terminating it within a few hundred yards of several residences and then are not prepared to present an exit route out of the

-2-

permitted for public input based on the recent release of the corridor route is unfair and that the final decision on the route should be postponed until all of the questions are adequately addressed.

9. Why do the Federal Agencies involved in this project feel that they are not required to register under the State Major Facility Siting Act, particularly when their obvious intent is to utilize the maximum private land possible in establishing the power transmission corridor.

The undersigned request written response to all the nine items posed in these comments submitted by the citizens of Gold Creek who are concerned and wish to see the power transmission line constructed with the least impact possible to all members of our community.

-4-

Name

Mailing Address

<u>Joe & Joe Wolke</u>	<u>Box 63</u> <u>Gold Creek, Mont 59733</u>
<u>Francis & Linda J. Thayer</u>	<u>Box 44</u> <u>Gold Creek, Mt. 59733</u>
<u>William C. Wolke & Susan & William</u>	<u>Box 62</u> <u>Gold Creek, Mont. 59733</u>
<u>Calvin E. Poole</u>	<u>Box 21, Gold Creek, MT 59733</u>
<u>Richard Wolke & Eleanor Wolke</u>	<u>Box 65 Gold Creek MT 59733</u>
<u>John M. Volke</u>	<u>Box 65 Gold Creek MT 59733</u>
<u>Jim & Betty Hamon</u>	<u>Box 13 Gold Creek mt. 59733</u>
<u>Lynn L. Hamon</u>	<u>Box 13, Gold Creek, Mt. 59733</u>
<u>Norman Williams</u>	<u>Box 16, Gold Creek, MT.</u>
	<u>Box 53 Gold Creek</u>

Name

Mailing Address

<u>Ann & Carl Johnston</u>	<u>Box 54 Gold Creek, Montana</u> <u>59733</u>
<u>Arthur Hollenback</u>	<u>Box 36 Gold Creek, Mont. 59733</u>
<u>John & Carol Hollenback</u>	<u>Box 35 Gold Creek, Montana</u> <u>59733</u>
<u>Eric J. Johnson</u>	<u>Box 52 Gold Creek, Mont.</u>
<u>Richard L. Thomas</u>	<u>Box 55 Gold Creek, Mont.</u>
<u>William C. Thomas</u>	<u>Box 55 Gold Creek, Mont.</u>
<u>Paul E. Thomas</u>	<u>Box 42 Gold Creek, Mont.</u>
<u>Elizabeth B. Burdett</u>	<u>Box 42, Gold Creek, MT</u>
<u>Morothy M. Donahue</u>	<u>Box 23 Gold Creek, MT.</u>
<u>Louise J. Donahue</u>	<u>Box 23 Gold Creek MT</u>

Name

Mailing Address

<u>Wood</u>	<u>Box 83</u> <u>Garrison, mt. 59731</u>
<u>Max E. Burke</u>	<u>Box 11</u> <u>Garrison, Mt. 59731</u>
<u>Norman & Lillian Shultz</u>	<u>Box 126</u> <u>Garrison, MT 59731</u>
<u>Ray & Cherry Wimberly</u>	<u>Box 124</u> <u>Garrison, Mt. 59731</u>
<u>Donald B. Wimberly</u>	<u>Box 85 Garrison</u>
<u>George S. Johnson</u>	<u>Box 94 Garrison</u>
<u>Ben J. Johnson</u>	<u>Box 117 Garrison, MT 59731</u>
<u>Glenn & Angela Pitman</u>	<u>Box 76</u> <u>Garrison, Mt.</u>
<u>Cliff Crossley</u>	<u>Box 224</u> <u>Garrison</u>

Bonneville Power Administration

In reference to your EIS on the Colstrip Project 500KV powerline relevant to bring up some questions and object to some of the material

1. On the first page you show that the study was prepared by the BLM, Forest Service, and the BPA. The majority of the power line alternatives run on private property over landowners who have had no say in the proposed routes.

2. The government agencies are supposed to be working for the people. If they are trying to do what is in the best interest of the private citizens the power line would be run on BLM, state and national forest land avoiding private land and homes; utilizing public land for the people receiving the power and people who would otherwise be impacted along the route.

3. In selecting the proposed substation site at Gold Creek more attention had been given to the effect on elk habitat than to the effect the site would have on the people of the area.

4. We feel by segmenting the study into 20 mile sections and ending this study at the proposed substation in Gold Creek you have shown only a part of the impact on our community. If you were to show where the proposed 500KV line would leave our area it would increase the land and people impacted and therefore make this substation site less acceptable.

5. On the proposed Northern route if the

substation were to be kept in the north of the valley, you say there would have to be two additional 230KV lines run down the valley to existing lines. If that is so, we cannot see how any would cause nearly the impact on people, property, and wildlife as the proposed 500KV line.

William C. Wollers
Susan E. Wollers
Box 62
Gold Creek, Montana
59732
March 24, 1981

Neil Morck
Bureau of Land Management
222 N. 32 Street
P.O. Box 30157
Billings, Montana 59107

Dear Sir:

After reviewing the Draft Supplement to the Final Colstrip Project EIS we have the following comments:

First of all we are opposed to only government agencies being involved in the writing of the EIS Statement. It seems to us it would be much more effective to have some input from the private citizens.

In the EIS Statement, there seems to be more concern for the Fish and Wildlife than the people living in the area. They did more research on where the elk calve than they did on where the people live and what effect it will have on them.

We are concerned that we will have to live with the Power Line, both scenic and whatever harmful effects it might cause, and will not receive any benefits tax wise to our county. This does not seem like justice to us.

We are also concerned that with all the heavy equipment that will be brought in to build and maintain the line who will be responsible for paying and repairing all the damages to county roads and bridges.

When the Bonneville Power was looking for alternative routes it looks like they went out of their way to stay on private land. We feel they should be made to stay on Federal and State Land whenever possible.

In regard to statement on rangeland on page 3-27. It states that rangeland impacts would be low because even the productivity of the rangeland crossed is rated low, its ability to recover is good. We feel this is contradictory. How can the rangeland be rated low and still recover quickly? This is not possible.

John & Carole Hollenback
Box 25
Gold Creek, Montana 59733

John Hollenback
Carole Hollenback

United States Department of Interior
Bureau of Land Management
222 North 32nd Street
P. O. Box 30157
Billings, Montana 59107

REASON: Comment On Impact to School District 33, Gold Creek, Mont.

The Gold Creek School District Board Members made a resolution on March 19, 1981 at 8:00 P.M. at a Special School Board meeting held at the Gold Creek School.

RESOLUTION: We oppose the Bonneville Power Administration proposed site 3 at Gold Creek. We oppose all corridors affecting School District 33. School District 33 is highly concerned about the loss of tax revenue and that the Transient Construction population would have an adverse impact on the Districts Budgeting. School District 33 opposes the segmenting of District 33 that would be a direct result by substation Site 3.

Respectfully Submitted By
Board of Trustees
School District 33
Gold Creek, Montana

John Hollenback
CHAIRMAN
Robby Hollenback
TRUSTEE
Susan Wollers
TRUSTEE

Alma Hollenback, CLERK

TO THE B.P.A.
DEER LODGE MEETING

AS A SENIOR CITIZEN I AM VERY MUCH CONCERNED ABOUT THE
NEW TRANSMISSION LINE REGARDING THE FOLLOWING QUESTIONS:

- 1 - WHAT EFFECT WILL IT HAVE ON RADIO PROGRAMS? WE KNOW WHAT
HAPPENS WHEN YOU DRIVE UNDER A HIGH VOLTAGE LINE, WILL WE
HAVE A STEADY HUM OR INTERFERENCE?
- 2 - WE GET OUR TV RECEPTION FROM BUTTE ON CHANNELS 4 and 6
IF THE AAA ROUTE IS USED THE LINE WOULD COME DIRECTLY
ACROSS OUR PATH OF RECEPTION. WHAT WILL IT DO TO OUR
TV THEN? IF OUR TV IS CUT OFF I THINK THE B.P.A. SHOULD
GIVE THE GARRISON AREA CABLE TV.
- 3 - WILL IT BE POSSIBLE TO GET SATELLITE TV RECEPTION?
- 4 - ACCORDING TO REPORTS, IRRIGATION SPRINKLERS MUST BE
GROUNDED TO AVOID SHOCK FROM STATIC ELECTRICITY.
WHAT ABOUT FISHING IN ANY STREAM THE LINE WOULD CROSS?
COULD YOU GET SHOCKED THE SAME AS FISHING DURING A
LIGHTENING STORM?

THESE QUESTIONS ARE IN THE MINDS OF MANY PEOPLE AROUND
HERE AND SHOULD BE ANSWERED. I WOULD LIKE AN ANSWER BY MAIL.

IN REGARDS TO THE AA ROUTE IT IS NO BETTER THAN THE AAA
ROUTE BECAUSE IT WOULD PASS ABOUT 1/2 MILE NORTH OF HERE, COULD
POSE AS MANY PROBLEMS FOR US OR MORE. THEREFORE I AM OPPOSED
TO THE TRANSMISSION LINE BEING BUILT IN THIS VICINITY AT ALL.

SINCERELY,

Alfred E. Gerdtz

Alfred E. Gerdtz
Garrison, Mont

Box 6 59731

Ivan Johnston
Gold Creek, MT 59733
3-24-81

My comments and/or complaints about construction of the
Bonneville Power Line over private land in the Gold Creek
Area:

I am opposed to the power line and substation being
built near homes. The line as proposed would be in close
proximity to a number of families.

What would be the biological effects of the high
voltage lines on people? Also, how would grazing cattle be
affected over a period of time?

No one, I'm sure, is trying to stop the line from
coming through the state, but what is wrong with it being
placed on forest service land, well away from homes?

There are considerations, such as the effect of
heavier traffic upon school children, disrupted historical
areas, as well as the loss of private land. There should be
every effort to keep the line on federal land so far as is
possible. It has been said that such lines adversely affect
wildlife, which may be very true. I doubt that any land
owners consider elk or gophers as more important than people.

Ivan Johnston

March 24, 1981

Bonneville Power Administration:

We have a cattle ranch west of Garrison that would be crossed by the
AA corridor. Alternative AA would cross or parallel a large portion of our
irrigated land. It would also cross within a quarter of a mile from our
residence and quite close to our calving shed and calving area.

We feel that this alternative corridor was a spur of the moment decision
that resulted from a meeting with Senator Melcher in Deer Lodge. We also
take exception to the amount of irrigated land involved in this corridor
as stated in the Colstrip Project E.I.3. Therefore, for the above reasons,
and the health and safety of our family and the damage it would do our
neighbors, we want to go on record as strongly opposed to this AA route.

Sincerely,

William F. Murphy
Marilyn W. Murphy
William F. Murphy

Marilyn W. Murphy

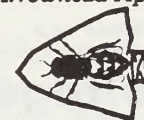
Box 37

Garrison, Montana 59731

Arrowhead Apiaries

Route 1 Box 57
Deer Lodge, Montana 59723
Telephone (406) 846-1481

Owners:
Paul and Betty Peterson



As Beekeepers

We are concerned about the effects of magnetic fields created by high-
voltage power lines.

Enclosed are three articles relating in various ways as to the energy
field and effects of transmission lines of large capacity.

Your Colstrip EIS Supplement Appendix C raises more questions than it
provides answers. Simply put you are creating a situation for us to
which you have no real answers concerning magnetic fields.

When final decision is made as to where the transmission line for
Colstrip Unit #3 will be located it will be necessary to consult with
us as if we were the landowners with whom you will be directly involved.

Testimony presented at Deer Lodge March 24, 1981

Power Lines Affect Plants and Animals (and Bees)

BY JAMES PORTER

WASHINGTON, Jan. 31

But public concern about possible health hazards due to the overhead power lines that are spreading across the landscape and down the road has not been enough to stop the construction of new lines. The fact that some, wheat and alfalfa seedlings are stunted. Rats seek shelter and perform away from the lines. And some birds are dying.

The subject has become a major issue in public hearings regarding the siting and right-of-way for new high-voltage lines. Urban sprawl has caused developers to push closer to power line right-of-way that previously were avoided. Farmers find themselves planting crops and raising livestock in and around the cross-country power routes.

Conducted by the industry's Electric Power Research Institute, the studies seek to discover possible health hazards to humans living or working along the lines. The studies, which are the most effective ways to some large amounts of electricity over long distances. EPRR researchers stress that to

there are several fields which warrant "immediate" research. Battling with honeybees and mice, researchers now are gathering to test using animals as test subjects in the field. At least 100 animals are housed in the state of Indiana controlled breeding.

Using 20 animals raised under a controlled but "normal" environment, the researchers hope to determine the extent to which they will be exposed to an electric field. At the completion of the project, the researchers hope to have a complete survey of the biological status of the field. The study originally placed at 100 feet, but originally placed at 100 feet, but originally placed at 100 feet, but originally placed at 100 feet.

Research to date has suggested that if electric fields induce biological effects, the most vulnerable is the nervous system.



Sherry Devlin

Ominous signs for

Back in the good old days — when powerlines packed a 138-kilovolt punch — electrocution was the only thing you had to worry about.

Then came 144-kilovolt lines. Then 500 kilovolts. Then 765 and 1,100-kilovolt monsters.

Then researcher J.H. McElhenny found bone tumors in rats exposed to low-level electric fields, and A.J. Glendon reported depressed growth rates in chicks reared in electrified cooroves.

"Even the simple act of walking underneath a 1,100-kilovolt transmission line becomes a painful experience due to repeated shocks brought about by blades of grass touching the soles," wrote two government researchers.

Electrocution suddenly took a back seat to a long list of less-publicized health hazards associated with high-voltage powerlines.

Still, more than 100,000 miles of super-charged lines crisscross the United States and countless thousands more are planned — including a double deck of 500-kilovolt lines from Colstrip to Spokane, past Missoula.

Researchers and physicians are worried. "In view of the large population at risk, all the health hazards associated with high-voltage transmission lines should be carefully examined," said Andrew Marino and Robert Becker in a recent issue of Medical Research Engineering.

"It is well known that high-voltage transmission lines cause electrical breakdown of the air in the immediate vicinity of the wires via a process known as corona," Marino and Becker explained. "Corona is a noisy process and accounts for the crackling sound frequently heard in the vicinity of high-voltage lines."

For example, a 765-kilovolt line planned by Rochester Gas and Electric Corp. in New York will interfere with the sleep of people 825 feet beyond the right of way. "And constant exposure to noise is medically known to constitute a hazard to the physiological and psychological well-

being of the victim," Marino and Becker reported.

Corona also results in the production of ozone, a toxic gas harmful to plants and animals. Then, too, there are the painful shocks experienced by humans or animals walking near high-voltage powerlines. The higher the voltage, the bigger the shock — especially if you touch a large grounded metallic object like a tractor or car.

"More recently, however, research has indicated that the electric and magnetic fields produced by high-voltage transmission lines may pose a much more direct and significant biological problem," according to the Medical Research article. "When the flow of electricity is initiated, the space around the wire is filled with energy."

In 1970, the Navy financed research of electromagnetic fields as part of a new submarine communications program called Project Sanguine. "The operating characteristics of Sanguine were comparable to high-voltage transmission lines, except that the latter have an electric field about one million times stronger," Marino and Becker reported.

The results were ominous. First, researcher E. Goodman studied the effect of Project Sanguine's electric field on the growth properties of slime mold. Without fail, exposure altered the normal reproductive cycle of the mold and slowed its intracellular activity.

Then, Glendon studied the effect of Sanguine's electromagneticism on the growth of animals. Both exposed chicks and mice were significantly smaller than their unexposed cousins. And each new generation born was even smaller.

Next, V. Spitzke found that rats trained to perform simple tasks did not perform as well in a low-level electric field. Rats given a choice between an electrified region and a field-free home constantly moved to the field-free zone.

BPA studies line routes

MISSOULA (AP) — The Bonneville Power Administration says it will study the possibility of burying the 500-kilovolt Colstrip power lines in the Missoula area, but says the prospect is remote.

Following hundreds of protests by Missoula homeowners and politicians, the agency said it has temporarily abandoned plans to run a high-voltage powerlines along its easeling right-of-way in the Rattlesnake Valley.

The powerline will still be constructed, Bonneville engineers told an audience of about 50 here. But a full-blown environmental impact will be written first, to analyze all possible routes between Garrison and Spokane.

Bonneville engineer Lou Driesen said a final route will not be selected until April 1982.

Driesen said all alternatives, including underground lines, would be studied. But you have to remember that right now there is no such thing as an underground 500-kilovolt line. This would be the first.

Driesen said that to bury the lines "We would have to dig a pit 8 feet deep and 30 feet wide. The heat from the cable would prevent anything from growing above and we would have to fence off the area to keep people from crossing it. When the line came to a road, we'd have to build a bridge."

The Bonneville plan is to run a double deck of high-voltage powerlines from Townsend to Colstrip, thus insulating southeastern Montana a power plant with major cities in the Pacific Northwest.

Jobless pay m

HELENA (AP) — A bill introduced in the Legislature Saturday would appropriate \$1.8 million to finance a 10-week assistance for workers whose unemployment benefits normally would expire in April.

Benefits are limited by present law to 26 weeks. The extension, if approved, would come just as the next time for the almost 1,500 workers thrown out of jobs by the

Montana Standard 1/30/80 22, 1981-9

Missoula, Sunday, March 22, 1981-9 of the Missoulian

m high-voltage lines

"U. Warnke found that electric fields caused grossly abnormal behavior in bees," Marino and Becker concluded. "At 118 volts per centimeter, the bees ceased to store honey and pollen and began to kill each other. In a few days, the bees were either abandoned or completely sealed off by the bees, resulting to their death."

W. Southern, in turn, found that even the extremely low-level electric fields of Project Sanguine disrupted the orientation of birds. And each lower mile of a 765-kilovolt powerline creates a 14-mile zone with a higher electric charge than that created by Sanguine. The effect of those zones on bird migration is not known.

"In the Soviet Union," Marino and Becker wrote, "they believe the effects of exposure to electric fields are cumulative. Such effects include disturbances of the cardiovascular system, the central nervous system, blood composition and lower sexual capability."

The hazards, the researchers continued, extend thousands of feet from the actual transmission line. You can escape electrocution simply by not touching the line. To escape the electric field, you'd have to move your house.

Tips from Bonneville

Electric utilities, both public and private, have yet to recognize the health hazards of high-voltage powerlines. The evidence is conflicting, utility spokesmen claim. Transmission lines are not proven harmful.

But the Bonneville Power Administration does have a pamphlet called "Tips on How to Behave Near High-Voltage Powerlines." The tips include:

- Do not climb towers. Do not shoot or otherwise damage insulators. Never touch a fallen line.
- Felling of vehicles should not be done under the powerline or closer than 70 horizontal feet from the outside conductor. This is to avoid all possibility of gasoline ignition.

"Induced voltage in a metal building can create the same sort of sensation that is experienced when you cross a nylon carpet and touch a metallic object. Each creates static electricity, a discharge from your body to the metallic object causing a momentary and uncomfortable sensation."

"In order to minimize this voltage discharge which could possibly cause a secondary reaction that might be hazardous to you, it is desirable that all metal buildings within 100 feet of the outside conductor of any 500,000-volt line be grounded."

"Model airplanes should always be flown well away from any powerline. If the plane should become caught in a powerline. Call your power company. Do not climb after it or try to pull it down. If it has a hand line — Let Go."

2,4-D versus coffee

Yet another medical battle is being waged these days over the health hazards of toxic chemicals. In the Pacific Northwest, the villain is 2,4-D — a herbicide used to clear forest undergrowth.

While activists throughout the Northwest want the weed killer banned, a recent report by Oregon State University researchers James Witt and Frank Dost says 2,4-D is much less dangerous than coffee.

"The comparison," Witt said in a letter to one subscriber, "is made because both 2,4-D and coffee can cause birth defects or spontaneous abortion if the dose is sufficient to experimental animals."

Two pages — and 20 calculations later — Witt comes to a conclusion: "The rat that a woman in the first trimester of pregnancy will produce a child with birth defects or suffer a spontaneous abortion from being directly sprayed with 2,4-D by an aircraft is 20 times less than the risk she incurs from drinking one cup of coffee."

High Shoals Apartments
 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258, 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338, 340, 342, 344, 346, 348, 350, 352, 354, 356, 358, 360, 362, 364, 366, 368, 370, 372, 374, 376, 378, 380, 382, 384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 410, 412, 414, 416, 418, 420, 422, 424, 426, 428, 430, 432, 434, 436, 438, 440, 442, 444, 446, 448, 450, 452, 454, 456, 458, 460, 462, 464, 466, 468, 470, 472, 474, 476, 478, 480, 482, 484, 486, 488, 490, 492, 494, 496, 498, 500, 502, 504, 506, 508, 510, 512, 514, 516, 518, 520, 522, 524, 526, 528, 530, 532, 534, 536, 538, 540, 542, 544, 546, 548, 550, 552, 554, 556, 558, 560, 562, 564, 566, 568, 570, 572, 574, 576, 578, 580, 582, 584, 586, 588, 590, 592, 594, 596, 598, 600, 602, 604, 606, 608, 610, 612, 614, 616, 618, 620, 622, 624, 626, 628, 630, 632, 634, 636, 638, 640, 642, 644, 646, 648, 650, 652, 654, 656, 658, 660, 662, 664, 666, 668, 670, 672, 674, 676, 678, 680, 682, 684, 686, 688, 690, 692, 694, 696, 698, 700, 702, 704, 706, 708, 710, 712, 714, 716, 718, 720, 722, 724, 726, 728, 730, 732, 734, 736, 738, 740, 742, 744, 746, 748, 750, 752, 754, 756, 758, 760, 762, 764, 766, 768, 770, 772, 774, 776, 778, 780, 782, 784, 786, 788, 790, 792, 794, 796, 798, 800, 802, 804, 806, 808, 810, 812, 814, 816, 818, 820, 822, 824, 826, 828, 830, 832, 834, 836, 838, 840, 842, 844, 846, 848, 850, 852, 854, 856, 858, 860, 862, 864, 866, 868, 870, 872, 874, 876, 878, 880, 882, 884, 886, 888, 890, 892, 894, 896, 898, 900, 902, 904, 906, 908, 910, 912, 914, 916, 918, 920, 922, 924, 926, 928, 930, 932, 934, 936, 938, 940, 942, 944, 946, 948, 950, 952, 954, 956, 958, 960, 962, 964, 966, 968, 970, 972, 974, 976, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000, 1002, 1004, 1006, 1008, 1010, 1012, 1014, 1016, 1018, 1020, 1022, 1024, 1026, 1028, 1030, 1032, 1034, 1036, 1038, 1040, 1042, 1044, 1046, 1048, 1050, 1052, 1054, 1056, 1058, 1060, 1062, 1064, 1066, 1068, 1070, 1072, 1074, 1076, 1078, 1080, 1082, 1084, 1086, 1088, 1090, 1092, 1094, 1096, 1098, 1100, 1102, 1104, 1106, 1108, 1110, 1112, 1114, 1116, 1118, 1120, 1122, 1124, 1126, 1128, 1130, 1132, 1134, 1136, 1138, 1140, 1142, 1144, 1146, 1148, 1150, 1152, 1154, 1156, 1158, 1160, 1162, 1164, 1166, 1168, 1170, 1172, 1174, 1176, 1178, 1180, 1182, 1184, 1186, 1188, 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1522, 1524, 1526, 1528, 1530, 1532, 1534, 1536, 1538, 1540, 1542, 1544, 1546, 1548, 1550, 1552, 1554, 1556, 1558, 1560, 1562, 1564, 1566, 1568, 1570, 1572, 1574, 1576, 1578, 1580, 1582, 1584, 1586, 1588, 1590, 1592, 1594, 1596, 1598, 1600, 1602, 1604, 1606, 1608, 1610, 1612, 1614, 1616, 1618, 1620, 1622, 1624, 1626, 1628, 1630, 1632, 1634, 1636, 1638, 1640, 1642, 1644, 1646, 1648, 1650, 1652, 1654, 1656, 1658, 1660, 1662, 1664, 1666, 1668, 1670, 1672, 1674, 1676, 1678, 1680, 1682, 1684, 1686, 1688, 1690, 1692, 1694, 1696, 1698, 1700, 1702, 1704, 1706, 1708, 1710, 1712, 1714, 1716, 1718, 1720, 1722, 1724, 1726, 1728, 1730, 1732, 1734, 1736, 1738, 1740, 1742, 1744, 1746, 1748, 1750, 1752, 1754, 1756, 1758, 1760, 1762, 1764, 1766, 1768, 1770, 1772, 1774, 1776, 1778, 1780, 1782, 1784, 1786, 1788, 1790, 1792, 1794, 1796, 1798, 1800, 1802, 1804, 1806, 1808, 1810, 1812, 1814, 1816, 1818, 1820, 1822, 1824, 1826, 1828, 1830, 1832, 1834, 1836, 1838, 1840, 1842, 1844, 1846, 1848, 1850, 1852, 1854, 1856, 1858, 1860, 1862, 1864, 1866, 1868, 1870, 1872, 1874, 1876, 1878, 1880, 1882, 1884, 1886, 1888, 1890, 1892, 1894, 1896, 1898, 1900, 1902, 1904, 1906, 1908, 1910, 1912, 1914, 1916, 1918, 1920, 1922, 1924, 1926, 1928, 1930, 1932, 1934, 1936, 1938, 1940, 1942, 1944, 1946, 1948, 1950, 1952, 1954, 1956, 1958, 1960, 1962, 1964, 1966, 1968, 1970, 1972, 1974, 1976, 1978, 1980, 1982, 1984, 1986, 1988, 1990, 1992, 1994, 1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016, 2018, 2020, 2022, 2024, 2026, 2028, 2030, 2032, 2034, 2036, 2038, 2040, 2042, 2044, 2046, 2048, 2050, 2052, 2054, 2056, 2058, 2060, 2062, 2064, 2066, 2068, 2070, 2072, 2074, 2076, 2078, 2080, 2082, 2084, 2086, 2088, 2090, 2092, 2094, 2096, 2098, 2100, 2102, 2104, 2106, 2108, 2110, 2112, 2114, 2116, 2118, 2120, 2122, 2124, 2126, 2128, 2130, 2132, 2134, 2136, 2138, 2140, 2142, 2144, 2146, 2148, 2150, 2152, 2154, 2156, 2158, 2160, 2162, 2164, 2166, 2168, 2170, 2172, 2174, 2176, 2178, 2180, 2182, 2184, 2186, 2188, 2190, 2192, 2194, 2196, 2198, 2200, 2202, 2204, 2206, 2208, 2210, 2212, 2214, 2216, 2218, 2220, 2222, 2224, 2226, 2228, 2230, 2232, 2234, 2236, 2238, 2240, 2242, 2244, 2246, 2248, 2250, 2252, 2254, 2256, 2258, 2260, 2262, 2264, 2266, 2268, 2270, 2272, 2274, 2276, 2278, 2280, 2282, 2284, 2286, 2288, 2290, 2292, 2294, 2296, 2298, 2300, 2302, 2304, 2306, 2308, 2310, 2312, 2314, 2316, 2318, 2320, 2322, 2324, 2326, 2328, 2330, 2332, 2334, 2336, 2338, 2340, 2342, 2344, 2346, 2348, 2350, 2352, 2354, 2356, 2358, 2360, 2362, 2364, 2366, 2368, 2370, 2372, 2374, 2376, 2378, 2380, 2382, 2384, 2386, 2388, 2390, 2392, 2394, 2396, 2398, 2400, 2402, 2404, 2406, 2408, 2410, 2412, 2414, 2416, 2418, 2420, 2422, 2424, 2426, 2428, 2430, 2432, 2434, 2436, 2438, 2440, 2442, 2444, 2446, 2448, 2450, 2452, 2454, 2456, 2458, 2460, 2462, 2464, 2466, 2468, 2470, 2472, 2474, 2476, 2478, 2480, 2482, 2484, 2486, 2488, 2490, 2492, 2494, 2496, 2498, 2500, 2502, 2504, 2506, 2508, 2510, 2512, 2514, 2516, 2518, 2520, 2522, 2524, 2526, 2528, 2530, 2532, 2534, 2536, 2538, 2540, 2542, 2544, 2546, 2548, 2550, 2552, 2554, 2556, 2558, 2560, 2562, 2564, 2566, 2568, 2570, 2572, 2574, 2576, 2578, 2580, 2582, 2584, 2586, 2588, 2590, 2592, 2594, 2596, 2598, 2600, 2602, 2604, 2606, 2608, 2610, 2612, 2614, 2616, 2618, 2620, 2622, 2624, 2626, 2628, 2630, 2632, 2634, 2636, 2638, 2640, 2642, 2644, 2646, 2648, 2650, 2652, 2654, 2656, 2658, 2660, 2662, 2664, 2666, 2668, 2670, 2672, 2674, 2676, 2678, 2680, 2682, 2684, 2686, 2688, 2690, 2692, 2694, 2696, 2698, 2700, 2702, 2704, 2706, 2708, 2710, 2712, 2714, 2716, 2718, 2720, 2722, 2724, 2726, 2728, 2730, 2732, 2734, 2736, 2738, 2740, 2742, 2744, 2746, 2748, 2750, 2752, 2754, 2756, 2758, 2760, 2762, 2764, 2766, 2768, 2770, 2772, 2774, 2776, 2778, 2780, 2782, 2784, 2786, 2788, 2790, 2792, 2794, 2796, 2798, 2800, 2802, 2804, 2806, 2808, 28

March 24, 1981

Dear Sirs

We want to go on record as being opposed to all the B.P.A. routes that go through Gold Creek. We are also opposed to a substation in Gold Creek. We are opposed for the following reasons.

1. We feel this power line should be built mainly on State, Forest Service, and B.L.M. ground and stay off of private ground as much as possible, if not exclusively. When planning their A.A.A. route, B.P.A. made a definite turn in their line to leave state ground and come into our private property in section 19. We have a map attached to show that they could have stayed on state ground if they had just gone in a straight line.

2. B.P.A. does not show how they plan to leave Gold Creek with any of these routes. Every line shown in the E.I.S. stops at a substation in Gold Creek.

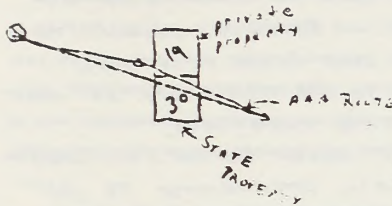
3. The E.I.S. states there are only 35 people in Gold Creek. There are almost 35 families and well over 100 people.

4. The people who wrote the E.I.S. are more concerned with the elk in this area than they are with the people. Wild animals can and will move if necessary. People cannot just leave their homes.

5. We are concerned with the increase in

the amount of traffic that would be a direct result of building a line and substation in Gold Creek. The traffic would have to go past our small school and this would be a threat to our children.

We will remain opposed to any route through Gold Creek until B.P.A. becomes more responsive to the people here and makes an effort to stay off of private property. We will not, under any circumstance, agree to a substation in Gold Creek.



WHY CAN'T THAT LINE GO STRAIGHT AS
INDICATED BY GREEN LINE?
WOULDN'T IT BE CHEAPER?

Francis A. Linda J. Hogan

24 MAR 1981

TO WHOM IT MAY CONCERN:

IT IS OUR FEELING AT THIS TIME THAT WE DO NOT SUPPORT ANY OF THE DESIGNATED ROUTES PROPOSED BY THE BPA THRU THE DEER LODGE VALLEY. AS PROPERTY OWNERS ON BECK HILL WE FEEL THE IMPACT ON OUR LIVES CREATED BY A 500 KV LINE WILL BE AWFUL. WE TOTALLY ABHORE THE IDEAL OF THIS LINE CROSSING THIS VALLEY WHERE WE HAVE LIVED MOST OF OUR LIVES. OTHER THAN THE SUBSTATION BEING LOCATED AT GOLD CREEK I CAN SEE NO REASON WHY THIS LINE HAS TO CROSS THE VALLEY. PERHAPS AN ALTERNATE SUBSTATION SHOULD BE LOCATED.

AFTER CONSIDERATION OF YOUR PUBLISHED ENVIRONMENTAL IMPACT STUDY IT IS MY IMPRESSION THAT NO LONG TERM STUDIES CAN REALLY VERIFY JUST HOW SAFE THESE LINE ARE CONCERNING HUMAN BEINGS. FOR THIS REASON I WOULD BE IN FAVOR OF A VERY REMOTE ROUTE REGARDLESS OF COST.

WE ALSO HAVE SERIOUS RESERVATIONS ABOUT OUR TELEVISION RECEPTION ON

BECK HILL. BECAUSE THE PREFERRED ROUTE IS BETWEEN THE MICROWAVE LOCATION AND OUR HOME WE FEEL OUR RECEPTION WILL BE IMPAIRED. WE ALSO FEEL THAT THE BPA CANNOT TOTALLY ASSURE US THAT THIS PROBLEM WILL NOT ARISE.

IT IS ALSO OUR STRONG CONVICTION THAT NO ONE PERSON FROM SOUTH OF DEER LODGE TO DRUMMOND ARE IN FAVOR OF THE PRESENT PROPOSED ROUTE. EVEN THE PRESENT ROUTE ON THE EAST SIDE OF DEER LODGE WILL SEVERELY IMPACT THE PEOPLE IN THE GOLD CREEK AREA AND FURTHER DOWN TO DRUMMOND. WE DO NOT WANT TO SEE THIS TAKE PLACE.

PERHAPS IT WOULD BE IN THE BEST INTERESTS OF ALL CONCERNED TO BE CONSIDERATE, LISTEN AND MAKE WISE RATIONAL DECISIONS. IT IS OUR SINCERE WISH THAT A GREAT DEAL OF CONCERN IS DIRECTED TOWARDS THIS PROBLEM. THE TIME HAS COME FOR BPA TO OPEN THEIR EARS AND LISTEN TO THE INVOLVED PEOPLE.

Sincerely,
Patrick M. Gille
Chairman
Dr. Lyle

Deer Lodge, Montana
March 23rd, 1981

United States Dept. of the Interior
Bureau of Land Management
P. O. Box 30157
Billings, Montana, 59107

Attention Neil Morck

Gentlemen:

We, a concerned group residing in, or adjacent to, the designated corridor of the proposed Bonneville Power Administration line through the south Deer Lodge valley, submit the following:

We feel the BPA originally planned the designated corridor through our valley with no consideration for the impact it would have on agricultural lands. In fact, we believe, the "first" route had one of the highest impacts on agricultural land of the nine routes proposed.

We feel our protests received little attention until we took our problem to Senator Melcher. Senator Melcher was emphatic that the line should not cross productive agriculture land if public or range land was available.

We wish to express our appreciation to the BPA for the effort they are making to find an alternate route acceptable to all concerned, avoiding irrigated land and sprinkler systems.

We realize we are not qualified to judge the impact on land adjacent to the alternate corridors after they leave our immediate valley. Therefore, we prefer not to recommend a particular alternate route.

We believe the BPA has spent a great deal of time investigating the many alternate routes through the Clark Fork valley and that their engineers are better qualified to co-ordinate the various segments of all areas to the benefit of all of us. We trust they will continue their effort to keep the line away from productive irrigated land and residences. Thank you.

Yours sincerely,

Leaves Johnson
Steve C. Belcher
Linda Johnson
Dorothy Johnson
Dorothy Johnson
Dorothy Johnson
Dorothy Johnson
Dorothy Johnson
Dorothy Johnson
Dorothy Johnson

Leaves Johnson
Steve C. Belcher
Linda Johnson
Dorothy Johnson
Dorothy Johnson
Dorothy Johnson
Dorothy Johnson
Dorothy Johnson
Dorothy Johnson
Dorothy Johnson

Mr. Neil Morck
Bureau of Land Management
Department of the Interior
222 North 32nd Street
P.O. Box #30157
Billings, Montana 59107

March 20, 1981

Dear Mr. Morck,

I am writing to you on behalf of the Drummond TV Tax District. We have a Translater Station, serving the Hall, New Chicago, and Drummond area, located approximately one-half mile South of the present B.P.A. powerline. This station amplifies both FM radio and TV signals to our area.

We feel that it is very important that you be made aware of our particular situation before a final decision, on the location of your powerline, is made. If your proposed line should happen to parallel the existing line, we feel, this could have a very adverse affect on the signal we now receive, or possibly destroy it altogether.

Because of our location (Geographically), this Translater is a necessity for many of the residents of our area. We do hope that you will take our situation into consideration, when making your final decision.

Sincerely,
Dorothy Johnson
Chairman
Drummond TV Tax District

cc/mm

Upper Clark Fork Valley Protective Assn.

Rick Lacey, Chairman 288-3359

Star Rt., Drummond, MT 59832

March 20, 1981

U. S. Dept. of Interior
Bureau of Land Management
222 North 32nd. St.
Billings, Mont. 59107

Mr. Neil Morck

Dear Sir:

Concerning the Townsend - Colestrip Transmission Line Environmental Impact Statement. I take exception only to that portion concerning me and my ranch. I wholly support the views of my neighbors in all other areas in their wishes to keep this line away from people, prime agriculture ground, and private range lands. This line should be sited on National Forest, B. L. M., and State lands as much as possible.

I personally take exception to the siting of a substation any place south of the Clark Fork River in the Gold Creek area. The siting in that area determines where the line, in my view, will go from there. Specifically, on the original survey route through the Flint Creek Valley. This Surveyed route passes through my ranch approximately three hundred feet north of my residences, over historic calving and holding corrals. This intrusion into my environment cannot be tolerated.

I submit that this substation siting be held up until the right of way survey for the Garrison West to Hot Springs section is determined.

Sincerely,

Elbe J. Brunette
Elbe J. Brunette
Jerry M. Brunette
Jerry M. Brunette

Gold Creek, Montana
March 24, 1981

U. S. Department of Interior
Bureau of Land Management
P.O. Box 30157
Billings, Montana 59107

ATTENTION: Mr. Niel Morck!

In regards to the 500,000 K V power line, we are submitting a letter of protest against the present proposed route through the Gold Creek area.

On the route now being considered, it would only be about 200 yards from our house and the proposed substation site would be less than a quarter of a mile. We feel that not only would it affect our lives, healthwise, but would devalue our property drastically.

We're sure that an alternate route could be selected that would keep it away from residential areas and private property.

We realize that the power line is important but we're sure that there is a lot of unpopulated government land that could and should be used rather than residential areas and private property and we HOPE HUMAN LIVES ARE STILL MORE IMPORTANT THAN ANIMALS!

Sincerely,

Norman Williams
Bert Williams
Concerned Citizens

Gold Creek, Montana
March 24, 1981

U. S. Department of Interior
Bureau of Land Management
222 North 32nd Street
P.O. Box 30157
Billings, Montana 59107

Attention: Mr. Neil Morck

Why do all of the studied and preferred corridors exclude maximum use of public lands, both state and federal, in favor of private holdings? Our position is that maximum utilization of public lands (i.e. BLM, FS, State) should be a prime consideration in location of the corridor.

We feel this is an area where the maximum number of people, including all power users serviced by the line, would benefit from the use of public land.

Sincerely,

David W. Sutton
David W. Sutton

Kenneth Fleming
1021 Dempsey Lake Rd.
Deer Lodge, MT 59722

March 24, 1981

Neil Morck
Bureau of Land Management
222 N. 32nd Street
P. O. Box 30157
Billings, MT 59107

Dear Mr. Morck:

As a rancher in the Deer Lodge Valley, I am opposing any powerline corridor that would cross this valley.

We have lost many valuable acres of prime ~~land~~ ground to four high-voltage powerlines (three Montana Power and one BPA), two railroads (one which has since abandoned use and the other which has discontinued passenger service) and two highways, (one of which is used as a frontage road and the other as Interstate-90).

I think our small valley has sacrificed more than its share of our one great natural resource--agriculture.

I would like to recommend that all state and federal lands be utilized for future powerline corridors where feasible.

Sincerely,

Kenneth Fleming
Kenneth Fleming

(5) We have a fishing pond that consists of 15 acres, which we sell fishing rights into. Who would be interested in fishing there when the high voltage line would be 100 ft. from the water edge? Perhaps fish would also be damaged in time!

(6) There are 4 Golden Eagles nesting on and near this property of ours where this power line crosses; they too would be in great danger from a high voltage line.

We strongly feel that we should not have to give up what we have worked for, for the past 31 years. If this high voltage power line would cross our property, our entire lovely hood would dissipate and we would not benefit in any way. The ranch would be completely useless for the production of hay, livestock, and human habitation. The sal value would be nothing!! There is a more applicable and harmless route that could be taken. Please give this your deepest consideration!! We would appreciate written answers to our questions in this letter.

Concerned (Oppressed) Citizens and tax payers

Marlin Gilman
and
Donna Gilman

Box 52
Garrison, Montana 59731

Bonneville Town Administration:

To Whom it May Concern:

In regard to the proposed route AA for the 500,000 volt power line, my husband Marlin Gilman and myself, Donna Gilman, are against this route for these 6 reasons.

- (1) This line would cross over three of our sprinkler irrigated meadows, our only meadows, I might add, and another area, which we plan, in the future, to develop into a sprinkler irrigated meadow. The dangers of handling aluminum pipe under such conditions are numerous!!
- (2) This line would be approximately 300 ft. from our house. There are not enough facts concerning the health hazards to people due to high voltage. We feel that the health of the 5 people in our home is much more important than cheap power for Washington and Oregon State people.
- (3) Our livestock grazing under such a power line, cannot be all that beneficial to livestock when the line cannot cross on Federal and State owned lands because it is detrimental to elk and deer inhabitants as well as grass deterioration. Is there really that much more difference between livestock tolerance to high voltage as to deer & elk tolerance?
- (4) We have two rented houses that would be the same distance as our house from this high voltage line. Who would be apt to rent such a place with the probability of a health hazard?

March 24, 1981

Neil Morck

Bureau of Land Management

222 N. 32nd Street

P.O. Box 30151

Billings, Mt. 59101

Mr. Morck,

The Colstrip EIS Supplement does not give a true picture of the situation at Gold Creek, Montana in relation to the proposed corridor and substation by BPA.

The potential health hazards and the devaluation of property are of great concern to us, our neighbors and the community which is many more than 35.

The only route acceptable would follow thru public, rather than private lands.

Ken and Lynn Cunningham
Gold Creek, Mt. 59133

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY -- NOMINATION FORM
FOR NPS USE ONLY
RECEIVED
DATE ENTERED
SEE INSTRUCTIONS IN HOW TO COMPLETE NATIONAL REGISTER FORMS
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS
1 NAME
HISTORIC
BOULDER HOT SPRINGS
2 LOCATION
3 miles southeast of Boulder on Montana #281
CITY/TOWN
near Boulder
STATE VICINITY OF 0120 Western #1
Montana 30 Jefferson 043
3 CLASSIFICATION
CATEGORY OWNERSHIP STATUS PRESENT USE
DISTRICT PUBLIC OCCUPIED AGRICULTURE MUSEUM
BUILDING PRIVATE UNOCCUPIED COMMERCIAL PARK
STRUCTURE BOTH WORK IN PROGRESS EDUCATIONAL PRIVATE RESID
SITE PUBLIC ACQUISITION ACCESSIBLE ENTERTAINMENT RELIGIOUS
OBJECT IN PROCESS YES RESTRICTED GOVERNMENT SCIENTIFIC
BEING CONSIDERED YES UNRESTRICTED INDUSTRIAL TRANSPORTATION
NO MILITARY OTHER
4 OWNER OF PROPERTY Stuart P. Lewin and Channing J. Hartelius, as
Co-Trustees, of the Paul A. Lewin Gift Trust for Stuart, U/A/D 9-1
and Stuart P. Lewin and Channing J. Hartelius, as Co-Trustees, of
the Irving L. Lewin Gift Trust for Rachel Michele, U/A/D
Boulder Hot Springs 11-12-76
CITY/TOWN STATE
Boulder Montana 59632
5 LOCATION OF LEGAL DESCRIPTION
COURTHOUSE
Jefferson County Courthouse
CITY/TOWN STATE
Boulder Montana 59632
6 REPRESENTATION IN EXISTING SURVEYS
TITLE
None
DATE
DEPOSITORY FOR SURVEY RECORDS
CITY/TOWN STATE

1 DESCRIPTION
CONDITION CHECK ONE CHECK ONE
EXCELLENT X DETERIORATED UNALTERED X ORIGINAL SITE
GOOD RUINS X ALTERED MOVED DATE
FAIR UNEXPOSED 1910
DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE
See Continuation Sheets #1 through #4

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CONTINUATION SHEET 1 ITEM NUMBER 7 PAGE 1
The Boulder Valley is located high on the eastern slopes of the Rocky Mountains, bounded by the Elkhorn Mountain Range to the North and the Boulder Range to the South. The valley, long valued as ideal ranch land, is drained by the Boulder River, which discharges into the Jefferson. The hot springs themselves, flow into the Little Boulder, a major tributary to the Boulder. A country road replaces the railroad, which passed through the hotel property, yet the area is still characterized by the peaceful, undeveloped countryside, the scenic view of the mountain peaks, cottonwood and willow-lined streams, and its pure mountain air. The visual environment around the hotel is essentially unchanged since its founding (see Exhibits "A" and "S").
The area to be nominated contains 240 acres of land traditionally associated with the Boulder Hot Springs. The nomination includes the hotel, bath houses, plunge, storage building, barn, corral and stables. The springs are scattered in the ravines to the south and east of the structures. The scene from the hotel veranda is the hay fields in the immediate foreground in the nominated acreage and the lofty peaks of the Elkhorn Range and the continental divide in the distance.
A crude bath house and tavern were constructed on the property in 1865. No sketch or photographic record of the property exists.
The first portion of the existing hotel was constructed in 1883 by ABEL QUAINANCE. The architect is unknown. No photographic record of this structure is available.
A second building phase which enveloped the 1883 structure took place between 1888 and 1891 under the direction of C. W. KERRICK. The public view of the hotel took on an "L" shape. The structure is of wood frame constructed upon a stone masonry foundation with intermediate timber piers resting on stone footings. The exterior was composed of white clapboard siding, and was roofed in wood shingles.
The architectural style of KERRICK's addition is eclectic "Queen Anne." The east side contains four gables with four, two, two and four windows showing on the third floor. The windows are wood double hung sash with the upper units divided with wood muntine into smaller glass panes. The north elevation, barn entrance like, has four closely placed windows

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fronted by a balcony of turned wooden spindle railing. The northwest corner features a four story bell tower with squared pointed spire roof and balconies at each of the windows.
The second story has windows evenly placed under those of the east elevation third story. The east center has a large balcony or sun deck which is repeated on the same floor, north elevation. The north second story windows are spaced one, two and one dissimilar to the third floor. All second and first floor windows are 1/1 wood double-hung sash with wooden framing.
The main floor is surrounded on the north and east sides by a long veranda enclosed by turned wood columns and smaller wood standards. The ground slopes unevenly to the northeast, and vacant crawl space is covered by lattice work. Both north and east elevations have a central public entrance doorway (see Exhibit "B").
In 1909 and 1910 a second structure was erected to the east which is connected to the 1891 building by an extension of the veranda. This addition reflects a basically similar architectural design, repeating the upper floor gables. As the east wing rests at lower elevation, a lower floor is found at ground level, one floor below the 1891 hotel. The earlier east courtyard became an enclosed fountain area or interior courtyard.
At the time of this addition the appearance of the original hotel was altered to assume a Spanish Colonial Revival style of architecture. This change was accomplished by curving the dormers and capping the end walls in pressed iron coping. Both structures were stuccoed in a course dashed pattern to give a massive appearance. The veranda was enclosed with stucco a third of the way up, and given arched openings to resemble the Moorish style. The north elevation second floor balcony was moved to the western end of the north facade, and a second balcony matched it on the eastern end of the north facade. The spire roof of the bell tower was replaced with a balloon to fit the newly adapted style (see Exhibits "C", "F", "G", "H" and "K").

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The hotel exterior remains essentially unchanged since 1910. A composition shingle roof has replaced the former wooden shingles, and one window on the north elevation, second floor, has been enlarged (see Exhibit "E").

Bath houses have been central to the commercial use of the hot springs since 1865. Though documentation on the exact locations and dates of construction are not available, it is known that several bath houses have existed on the property. The present bath house was constructed in 1910 to the east of the hotel complex. It is one story with a half story roof line that attempts to reflect the Spanish Colonial Revival style of the other structures. This building is currently still in use, but is in poor condition as a result of several winter storms in November, 1978.

The open air plunge was added to the enterprise at an undetermined date between 1912 and 1927. The plunge is of brick construction with tile walls and enclosed locker space at the north elevation. The plunge has not been used since it received irreparable damage in 1935 due to an earthquake.

The present outdoor plunge, south at the rear of the hotel, occupies a space erected in 1910 by MURRAY. It was substantially reconstructed in 1974. A store room to the south, opposite the plunge, also was constructed around 1910.

Other buildings include a barn and stables, and a corral. There are no dates available on their construction, but such structures have been a part of the hot springs complex since approximately 1883, and have probably been replaced at various times during the life of this business venture. The present structures appear to be circa 1909, but in stable condition (see Exhibit "Q").

The interior of the hotel dates to 1910. The lobby is reminiscent of the early western mountain region in its decor of animal heads. A clinker brick fireplace dominates the eastern wall, and serves as an alternative source of heat. There are high baseboards of softwood

SIGNIFICANCE

PERIOD		AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW				
<input type="checkbox"/> PREHISTORIC	<input type="checkbox"/> ARCHITECTURE PREHISTORIC	<input type="checkbox"/> COMMUNITY PLANNING	<input type="checkbox"/> LANDSCAPE ARCHITECTURE	<input type="checkbox"/> RELIGION		
<input type="checkbox"/> 1400-1499	<input type="checkbox"/> ARCHITECTURE HISTORIC	<input type="checkbox"/> CONSERVATION	<input type="checkbox"/> LAW	<input type="checkbox"/> SCIENCE		
<input type="checkbox"/> 1500-1599	<input type="checkbox"/> AGRICULTURE	<input type="checkbox"/> ECONOMICS	<input type="checkbox"/> LITERATURE	<input type="checkbox"/> SCULPTURE		
<input type="checkbox"/> 1600-1699	<input checked="" type="checkbox"/> ARCHITECTURE	<input type="checkbox"/> EDUCATION	<input type="checkbox"/> MILITARY	<input checked="" type="checkbox"/> SOCIAL/HUMANITARIAN		
<input type="checkbox"/> 1700-1799	<input type="checkbox"/> ART	<input type="checkbox"/> ENGINEERING	<input type="checkbox"/> MUSIC	<input type="checkbox"/> THEATER		
<input checked="" type="checkbox"/> 1800-1899	<input type="checkbox"/> COMMERCE	<input checked="" type="checkbox"/> EXPLORATION/SETTLEMENT	<input type="checkbox"/> PHILOSOPHY	<input type="checkbox"/> TRANSPORTATION		
<input checked="" type="checkbox"/> 1900-	<input type="checkbox"/> COMMUNICATIONS	<input type="checkbox"/> INDUSTRY	<input type="checkbox"/> POLITICS/GOVERNMENT	<input checked="" type="checkbox"/> OTHER (SPECIFY) thermal energy use recreation		

CIFIC DATES first building-1800's
present building-1910

BUILDER/ARCHITECT Unsubstantiated

STATEMENT OF SIGNIFICANCE

See Continuation Sheets #5 through #9

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stained dark which match the half timbering. The intermediate area is hand stenciled, as is the ceiling. The stenciling was completed by RICHARD A. STEIN in the 1920's. Lights are from Tiffany, and ceiling beams and pillars are of Oregon fir (see Exhibits "J" and "P").

The dining room has wainscoting and matching half timbering above. The walls and ceiling are also stenciled and beamed of fir. Windows for this room are two center-opening rectangles with transom above. The light shades are Pompeian bronze with clusters of Quezal iridescent shades suspended from different heights (see Exhibits "L" and "M").

The card room walls are of Chinese gold leaf pattern done in 1920 by MR. S. WALLER. The room is now used for vending machines and games. The back bar in the barroom features inlaid tile squares and backlit stained glass. Again, animal heads adorn the walls.

The 1910 hotel had a second floor dance hall, which has since been converted into guest rooms. The conversion did not destroy the original walls, nor change the high chandeliered ceiling. The present management intends to restore the original dance hall in the future.

The interior doors are of softwood stained dark. Door mouldings are wide and figured at the heads. The hardware on the doors and windows is cast brass or iron. The stairways have square balustrades with simple coved rails and smaller square standards (see Exhibits "I", "N" and "O").

The original floors were hardwood adorned with scatter oriental rugs. These floors are presently covered with carpeting and linoleum.

The Boulder Hot Springs Hotel complex is situated on 240 acres of land which contains at least thirty hot water springs and a sulphur spring. These springs are included in this nomination as they are central to this commercial enterprise (see Exhibit "D").

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The Boulder Hot Springs Hotel is significant as a remaining vestige of our historical recreational life style in Montana. The territory's population was composed primarily of miners and the attendant service providers in the second half of the nineteenth century. The gold and mineral seekers had little in the way of recreational opportunities, save, the saloons, the red light districts, occasional traveling shows and the pleasure of hot springs.

Hot springs around the state offered a myriad of recreational activities. Aside from the pleasure and relaxation to be afforded by the springs, there were generally saloons, sleeping rooms, dances, picnics and such, to attract the local workers and stall the weary traveler.

Such establishments developed as the Wassweiler's and the Broadwater in Helena, Corwin near Gardiner, Hunter's near Livingston, Elkhorn near Bannack, Lolo on the Lolo Trail, Alhambra near Clancy and the Boulder near the town of the same name. The primary resource in all instances, was the natural hot springs. Success of the operation depended upon a population in close enough proximity to patronize it; and Montana's population proved to be quite mobile in the early mining period as towns were born and vacated in search of the mother lode.

Small operations still exist at Norris, Warm Springs and Chico, and a hotel is in business at Lolo. Save for Boulder, the historic large scale enterprises at Hot Springs have ceased operation or have been destroyed through time. In spite of the decline in the historical listing, hot springs still play an important role in Montana's recreational and relaxational lifestyle. A new hotel resort was constructed at a hot spring near Anaconda as late as 1973.

For nearly a century, the Boulder Hot Springs Hotel, operated under various names, has continued to serve the public in the Rocky Mountain area around Helena and Butte. Although the hotel was substantially enlarged and modified in 1910, the visual environment in which it sits is significant in that it has changed little over time. The complex retains its pristine, rural environment that welcomed the refugees from the bustling mining towns of old. For this reason, the original 1865 240-acre tract of land is included in this nomination.

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According to WILLIAM QUAINANCE, former local resident, whose father owned this hotel, the Indians named this area the Peace Valley. These native Americans were the first men to make use of the hot springs as they passed through their transhumant cycle. In the early 1860's, JAMES E. RILEY, a gold prospector, "discovered" the hot springs and filed claim to the land on November 18, 1864. To capitalize on his claim, RILEY constructed a crude bath house and tavern the following year. The investment proved more profitable than a placer, as he played host to the miners and prospectors who enjoyed the healthful waters and the food and drink he served.

Following RILEY's death from smallpox in 1882, ABEL C. QUAINANCE and CORNELIUS GRISWOLD purchased the property and erected the original portions of the hotel, which still remain today. By 1888, the complex as described in a lease to C. W. KERRICK also included four cottages (now gone), a bath house, a plunge bath, barn and dance hall. These additions are suggestive of a prosperous enterprise. KERRICK, who made his fortune in railroads, apparently also had a good business, as he added a west wing, giving the structure an L-shaped appearance.

After KERRICK's addition, the hotel was described in The Northwest (1891), as a "large and handsome hotel" of three stories, with fifty two sleeping rooms, electricity, and heat from the hot water springs. The hotel had a spacious dining room and a separate dining area for invalids who came to be treated in the healthful waters. In addition to the hotel, another structure, now destroyed, provided other sources of amusement and recreation. It housed a large dance floor, a stage for concerts and theatrical performances, a gymnasium, a billiard room and the always present bar. The rooms were decorated with the heads of animals, lending a wild, Rocky Mountain atmosphere to the establishment. These same heads still adorn the lobby of the hotel.

The complex contained several bathhouses, but none of this period remain. Though structures for baths in the water have remained central to the hot springs establishment throughout its history, the continued steam from the hot water tends to rot the lumber prematurely, and such structures have been continually replaced.

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As the hotel changed over time, so did its patrons. The first guests, the Indians, paid no fare to enjoy their stay at the hot springs. The miners who would come to RILEY's place expected only the bare essentials of life to meet their needs.

The class of patrons rose to the wealthy or elite pleasure lovers during the KERRICK and MURRAY period of management. In the 1940's the hot springs resort appealed more to the active sport and outdoor lovers. Amusement is hunting, fishing, horseback riding, cross country skiing, hiking, and the hotel facilities included movies, bar and dancing.

The drawing card during the entire hot springs commercial enterprise has been the hot springs themselves. The springs are very dynamic, bursting to the surface at various places through historic times. There are approximately thirty springs actively flowing today, and as many collection systems. The hot water is piped into the outdoor plunge, the indoor bath house and steam rooms; it is circulated through radiators to heat the buildings, serves all hot water needs, and is cooled for the hotel's drinking water.

The water has a high sodium sulfate content, and decreasing proportions of silica, sodium chloride, calcium carbonate, potassium chloride, alumina, magnesium carbonate, and traces of iron. The temperature is 175 degrees constant. For bathing purposes the water must be mixed with cold well water to lower it to a comfortable temperature.

Curative powers have been attributed to these waters for over a century. Patrons suffering from such complaints as rheumatism, gout, liver, bowel, bladder and kidney disorders reported renewed health as a result of the use of the water. A sulphur spring on the property was reportedly used to resolve stomach and intestinal disorders. The hot water has a relaxing and soothing effect on the body.

This nomination includes the springs, the hotel, surrounding buildings and view, which are inseparably linked to the historic importance of the Boulder Hot Springs. The hotel itself is architecturally significant in that it represents Queen Anne style modified to reflect the Spanish Colonial style, and is one of the few remaining historic structures of this type in this region of the state. The property includes trailers

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Aside from the constructed recreational facilities, the area offered fishing in the mountain streams, big game hunting, and spectacular view. The combination of the built and natural environment attracted JAMES J. CORBETT, world heavyweight boxing champion from 1892 to 1897, and other eastern fighters, to choose the Boulder Hot Springs as a training center. WILLIAM QUAINANCE reports that the boxers would eat hearty, run on the roads around the hotel, bathe in the springs, train in the gymnasium, and drink to oblivion in the bar.

IRA A. LEIGHTON, M.D., also chose this location to establish his practice. As the springs were believed to hold curative properties for nearly every ailment, the invalids and the infirm as well as those temporarily ailing, patronized the hotel, and provided the doctor with a ready list of patients. LEIGHTON set up residence in 1887, just prior to KERRICK's lease and expansion of the business. The doctor's prescription was customarily mud baths, hot water baths, and a daily morning drink from the sulphur spring located to the east of the hotel veranda. Such treatments were in sufficient demand to keep the doctor in business there for at least thirty-two years.

In 1909 Butte millionaire, JAMES A. MURRAY, purchased the Boulder Hot Springs and built still another addition to the hotel which he linked to the original by lengthening the veranda to cross to the new wing. This created an inner courtyard which he graced with a fountain.

At the time of this addition, which was of similar structural architecture, MURRAY changed the eclectic Queen Anne Revival style to reflect a Spanish Colonial Revival appearance. This was accomplished by replacing the bell tower roof with a Moorish style, curving the coping elevations, and covering the exterior with stucco.

The basic appearance of the Boulder Hot Springs has remained fairly stable since MURRAY's time. The few changes are in stenciling on the interior walls, and of course, replacement of some interior furnishings. The 1910 style of massive, leather covered furnishings remains today.

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which are not a part of this nomination, but do not detract from its historic significance as they are to the southwest and out of view (see number 13 on sketch maps). These trailers will be removed by the present owner.

I believe the proposed powerlines should not be built for the following reasons:

1. It has never been shown that the need for this power is actually real. I think a good conservation effort could hold off this imaginary need for enough years to possibly replace the power with alternative methods. If not, then the project could be resubmitted.

2. The public was deliberately deceived in many hearings when Colstrip 1 and 2 were being approved. The power companies told the public point blank that no plans for 3 and 4 were even contemplated. As we know now, this was completely untrue.

3. I believe the coal should be shipped to the areas of population where the power is wanted. We have sacrificed our land and water - let them sacrifice their skies and power-line corridors.

4. BPA has yet to document proof of authorization to transmit power east of the divide. I think this proof should be shown before this project goes any further.

5. We were told there would be no Colstrip 3 and 4 -- so why not expect 3,4,5,6,... who knows how many -- more lines on this corridor once it is established and built?

6. I think the health hazards of two - 500 KV lines are real. I base this opinion on many studies as well as testimony from people living under lines of even smaller magnitude. BPA says they are safe. I think the burden of proof should be on BPA to show without a doubt they are safe, rather than the public having to prove the contrary.

7. The original EIS states that these towers are being constructed to accommodate DC lines as well as AC, yet no mention is made as to the change in electrical fields induced by the difference, or the difference in health hazards involved.

8. BPA should not be exempt from Montana Laws such as the Major Facilities Siting Act, with which it refuses to comply.

9. The residents of our community were not given proper notice of original hearings. I believe now, that this was intentional in order to slide through the necessary steps to satisfy environmental impact laws and keep us out of the matter as much as possible.

10. When trees are cut down, stakas driven for miles, thousands of dollars spent on manpower, aircraft, and vehicle use - how can BPA have the audacity to call the line "proposed."

11. Why should the FS and BLM have the power to approve this project when it passes over private lands? Their jurisdiction should be restricted to their own lands. They don't care what happens to Joe Landowner.

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12. Why does an agency of the federal government push a project through an area which almost 100% of the people are against when #1. It is supposed to be representing those people, and #2. It's no skin off their noses where it goes, so why not comply with our wishes?

13. And last - I've yet to hear a person at any of the hearings on this issue who is for these lines, yet they are going through. This being the case - why the hearings?

Sam Samson

Sam Samson
Box 558
Boulder, Mt. 59632

CERTIFICATE OF REGISTRATION

BOULDER HOT SPRINGS

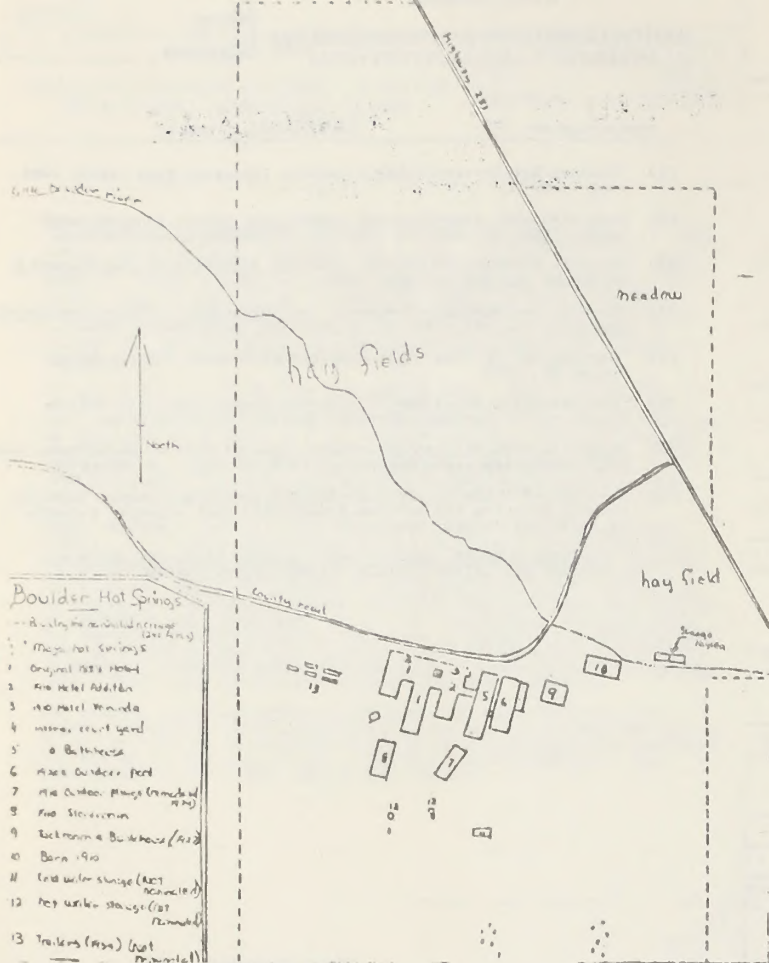
in JEFFERSON County is listed on the National
Register of Historic Places, effective JANUARY 29, 1979 in
accordance with the Historic Preservation Act of 1966.



James F. Quinn, Jr.
Governor

Robert M. Anderson
State Historic Preservation Officer

MONTANA HISTORICAL SOCIETY
HISTORIC PRESERVATION OFFICE



BUREAU OF LAND MANAGEMENT
Library
Denver Service Center

RECENT ADDITIONS

8 -RG6

to the final

DATE RETURNED	OFFICE
7-27-88	Specials D-473

(Continued on reverse)

